RECORD OF DECISION

MARYLAND SAND, GRAVEL AND STONE SITE
OPERABLE UNIT 3

ELKTON, CECIL COUNTY, MARYLAND

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 3, PHILADELPHIA, PENNSYLVANIA
OCTOBER 2002

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RECORD OF DECISION
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DECLARATION

Site Name and Location

Maryland Sand, Gravel and Stone Site
Elkton, Cecil County, Maryland
CERCLIS ID number MDD980705164.

Statement of Basis and Purpose

This decision document presents the selected remedial action for Operable Unit Three ("OU3") at the Maryland Sand, Gravel and Stone Site ("Site") located in Elkton, Cecil County, Maryland, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), as amended, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the remedial action for OU3 at this Site. The information supporting this decision is contained in the Administrative Record for this Site.

The Maryland Department of the Environment ("MDE") has not concurred with the selected remedy because of concerns related to OU2 which it seeks to have resolved.

Assessment of the Site

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record of Decision ("ROD"), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Remedy

This is the third and final phase of remedial action for the Site. The first phase addressed a portion of the buried wastes in the Eastern Excavation Area of the Site and restricted access to that portion of the Site. It also included interim remedial measures for contaminated shallow ground water and surface seeps in the Eastern Excavation Area. The second phase addressed contamination in the deeper aquifers at the Site. This phase will address contaminated soil and sediment in the Eastern Excavation Area and will provide final response measures for contaminated shallow ground water at the Site. This response action addresses principal threats through the treatment of soil, sediment and waste material which contain high concentrations of toxic substances.

The selected remedial action includes the following major components:

- Pre-design studies to evaluate procedures to promote the natural biodegradation processes occurring in the ground water plume;

- Pre-remediation sampling and analysis to further delineate the soil, sediment and waste material with contaminant concentrations that exceed the action levels, including screening or sampling to identify non-aqueous phase liquid ("NAPL");
- Excavation of an estimated 30,000 cubic yards of soil, sediment and solid waste material with contaminant concentrations exceeding the action levels and removal of any identified NAPL;
- On-site, *ex situ* treatment of soil, sediment and waste material using thermal desorption, and treatment of off-gases using particulate and vapor emission control systems (e.g., wet scrubber, fabric filter, condenser, activated carbon, catalytic or thermal oxidizer);
- Off-site disposal of a limited volume (approximately 1,000 cubic yards) of "special material" that may not be effectively treated on-site;
- Collection and off-site disposal of any NAPL identified during remedial design or the excavation and dewatering of soil;
- Backfilling of the excavations with treated soil;
- Placement of 2 feet of clean soil and establishment of a stable, vegetated cover over the backfilled areas;
- Expansion of the interceptor trenches to connect existing trenches 1 and 2;
- Enhanced biodegradation of contaminants in the ground water in the saturated portion of the Upper Sand aquifer where the ground water concentrations exceed cleanup levels, in order to accelerate the attainment of the ground water cleanup levels;
- Continued operation of the ground water recovery and treatment system until the ground water cleanup levels are achieved, in order to restore it as a drinking water source;
- Continued ground water monitoring until the ground water cleanup levels are achieved;
- Monitoring of surface water and sediment quality in the western unnamed tributary to Mill Creek; and
- Temporary land and ground water use restrictions on-site until the ground water cleanup levels are achieved.

Statutory Determinations

The selected remedial action is protective of human health and the environment, complies with federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

This remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment).

Because this remedial action will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, but it will take more than five years to attain remedial action objectives and cleanup levels, a policy review will be conducted within five years of construction completion for the Site to ensure that the remedy is, or will be, protective of human health and the environment.

10/25/02

Abraham Ferdas
Director
Hazardous Site Cleanup Division
Region III

Date

II. DECISION SUMMARY

MARYLAND SAND, GRAVEL AND STONE SITE
OPERABLE UNIT 3

ELKTON, CECIL COUNTY, MARYLAND

1.0 SITE NAME, LOCATION AND DESCRIPTION

The Maryland Sand, Gravel and Stone Superfund Site ("Site") is located north of U.S. Route 40 in Elkton, Cecil County, Maryland. The Site consists of soil contamination in the Eastern Excavation Area of property owned by the Maryland Sand, Gravel and Stone Company (the "Property") and related ground water contamination, and everywhere that contamination from the Property has come to be located. The Property consists of approximately 150 acres and is bounded to the south by a telephone transmission line right-of-way, to the north and west by residential properties along Marley Road and to the east by a property line approximately parallel to Ephrata Lane (Figure 1). The CERCLIS ID number for this Site is MDD980705164.

The U.S. Environmental Protection Agency ("EPA") is the lead agency for Site activities and the Maryland Department of the Environment ("MDE") is the support agency. EPA has reached prior settlements with potentially responsible parties ("PRPs") under which the PRPs have performed the response actions selected in Operable Unit One ("OU1") and Operable Unit Two ("OU2") Records of Decision ("RODs"). This action, which is the Third Operable Unit ("OU3") for this Site, addresses waste material and soil and sediment contamination in the Eastern Excavation Area of the Property, which is the only area of the Site where soil contamination was found at levels of concern, and ground water contamination in the Upper Sand aquifer at the Site.

The Site, formerly a sand and gravel quarry, was used for the disposal of hazardous waste. Soil, sediment and ground water at the Site are contaminated as a result of past waste disposal activities.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Maryland Sand, Gravel & Stone Company has owned the Property since 1962 and formerly operated a sand and gravel quarry there. Quarrying operations were conducted in two different areas of the Property known as the Eastern Excavation Area and the Western Excavation Area (Figure 2). About three acres of land within the Eastern Excavation Area reportedly were used for the disposal of waste processing water, still bottoms, sludge and drums of solid and semi-solid waste between 1969 and 1974. Three pits in the Eastern Excavation Area were used as surface impoundments where approximately 700,000 gallons of waste were deposited during the period of disposal operations. Some of the material that was placed at the Eastern Excavation Area would meet the definition of spent solvent wastes (F001-F005) under the Resource Conservation and Recovery Act ("RCRA"). As a result of the disposal activities, hazardous substances were released into Site soil, sediments, surface water and ground water. The ground water serves as a drinking water source for area residents.

In 1974, a high intensity chemical waste fire occurred at the Site; subsequently 200,000 gallons of liquid waste were removed from the Site and taken to the Kin Buc Landfill in Edison, New Jersey. The drums and sludge that remained following the removal of the liquid waste were

buried on-site in excavated pits.

EPA conducted a Preliminary Assessment and Site Inspection in1982, and placed the Site on the CERCLA National Priorities List ("NPL") in September of 1984 because of the presence of organic compounds in ground water and surface water.

From 1984 to1985, EPA conducted a Phase I, or OU1, Remedial Investigation ("RI") to investigate wastes and surface soil, surface water, sediment and ground water conditions at the Site, focusing primarily on the Eastern Excavation Area. The Phase I RI documented the presence of hazardous substances, including benzene, chlorinated solvents, 1,3-dichlorobenzene, 1,4-dichlorobenzene, cadmium and chromium, in shallow on-site ground water. Hazardous substances were also found in wastes and surface soils, surface water and sediments adjacent to waste disposal areas.

In 1985, following the Phase I RI, EPA issued a Record of Decision ("ROD") for OU1 at the Site. The OU1 ROD included measures to address the contamination in the shallow ground water, prevent the off-site migration of contaminants in leachate seeps and prevent trespassers from coming into contact with contaminated soils and wastes. The remedy selected in the OU1 ROD included the removal of buried drums and the installation and maintenance of a perimeter fence to restrict access to the Eastern Excavation Area. The OU1 remedy also included the recovery and on-site treatment of contaminated shallow ground water for a period up to five years. During this period the Agency planned to conduct additional characterization of the soils in the Eastern and Western Excavation Areas and the ground water in the deeper sand and bedrock aquifers, and to evaluate and undertake more comprehensive source control measures.

In 1988, 40 PRPs entered into a Consent Decree with EPA, agreeing to implement the OU1 ROD and reimburse EPA for related oversight costs. The Settlors under the Consent Decree installed a perimeter fence around the Eastern Excavation Area in 1989 and excavated and removed approximately 1,200 drums from the area now known as the Buried Waste Area in 1992. In addition, they installed a ground water recovery and treatment system to capture and treat contaminated ground water in the Upper Sand aquifer within the Eastern Excavation Area of the Site. The system includes three ground water interceptor trenches and associated recovery wells, a soil-bentonite subsurface barrier wall, and an air stripper to remove volatile organic compounds ("VOCs") from the recovered ground water. The ground water cleanup levels for shallow ground water specified in the OU1 ROD have not been attained. Therefore, the PRPs have operated the system continuously since February of 1996.

In 1986, 16 PRPs entered into an Administrative Order on Consent with EPA under which they performed a Phase II Remedial Investigation and Feasibility Study ("RI/FS"). The Phase II, or OU2, RI/FS was completed in 1990 and focused on the deeper ground water underlying the Upper Sand aquifer and the evaluation of potential contaminant sources in the Western Excavation Area. EPA issued a ROD for OU2 in 1990. The remedy selected in the OU2 ROD includes continued monitoring of ground water in the deeper water-bearing units (i.e., the Middle

Sand, the Lower Sand and the Bedrock aquifers), including selected residential and institutional wells, and the recovery and treatment of ground water should contaminant concentrations exceed the action levels specified in the OU2 ROD. A geophysical survey performed in the Western Excavation Area provided no evidence of waste disposal activities. The analysis of soil samples obtained from depths of up to 8 feet in the Western Excavation Area showed no unacceptable risk for current or future use on that portion of the Property and no need for further response actions in that area.

In 1992, an Amendment to the 1988 Consent Decree was entered by the United States District Court for the District of Maryland. Under the Amendment, 42 PRPs agreed to implement the OU2 ROD and reimburse EPA for related oversight costs. In 1998, the settling PRPs initiated the recovery and treatment of contaminated ground water in the Middle Sand aquifer after it was determined that the contaminant concentrations in the ground water exceeded the action levels specified in the OU2 ROD. The monitoring of the ground water quality in the Middle Sand aquifer will continue until EPA, in consultation with the State, determines that the cleanup levels specified in the OU2 ROD have been attained. The monitoring of on-site ground water in the Lower Sand and Bedrock aquifers was discontinued in 1998 following the evaluation of five years' sampling data which showed that no contaminants were present in the ground water of these aquifers at levels exceeding the action levels for ground water remediation specified in the OU2 ROD.

From 1995 to 2002, the settling PRPs performed the RI/FS for OU3, which addresses the contaminated soil, sediment and waste remaining in the Eastern Excavation Area of the Site following the drum removal activities conducted for OU1. In addition, because the OU1 ROD specifies interim remedial measures, only, for the shallow Upper Sand ground water, OU3 also addresses the contaminated shallow ground water at the Site. EPA issued a Proposed Plan for OU3 at the Site in July 2002.

3.0 COMMUNITY PARTICIPATION

The *Site Investigation Report* (October 1997), *Supplemental Soil Delineation Data Report* (March 2001), *Baseline Risk Assessment* (May 2000), *Baseline Risk Assessment Addendum* (August 2000), *Baseline Ecological Risk Assessment* (March 2001), *Focused Feasibility Study* (June 2002), Proposed Plan and other documents relating to OU3 at the Maryland Sand, Gravel and Stone Site were made available to the public in July 2002. They are located in the Administrative Record file which can be viewed at http://www.epa.gov/arweb or at the Administrative Record link on the sidebar of the U.S. EPA Region 3 Hazardous Site Cleanup Division Homepage at http://www.epa.gov/reg3hwmd. The notice of the availability of these documents was published in the *Cecil Whig* in July 2002. In addition, EPA sent a fact sheet summarizing the Agency's preferred remedial alternative for OU3 to addresses within a one-half-mile radius of the Site in July 2002.

From July 10, 2002 to August 9, 2002, EPA held a 30-day public comment period to accept

public comment on the remedial alternatives presented in the *Focused Feasibility Study* and the Proposed Plan and the other documents contained within the Administrative Record file for the Site. On July 31, 2002, EPA held a public meeting to discuss the Proposed Plan and accept comments. A transcript of this meeting is included in the Administrative Record file. The summary of significant comments received during the public comment period and EPA's responses are included in the Responsiveness Summary, which is a part of this Record of Decision.

4.0 SCOPE AND ROLE OF OPERABLE UNIT

Because there are multiple contamination problems at the Maryland Sand, Gravel and Stone Site, EPA organized the remedial investigations and response actions into three operable units, as outlined above, and as further detailed below. This approach has allowed steps to be taken to manage the migration of contaminants, mitigate the release or the threat of a release of hazardous substances, and eliminate or mitigate exposure pathways while studies have been undertaken to evaluate additional contamination problems. The problems evaluated and addressed for each operable unit are summarized below:

- Operable Unit 1: Buried drums, contaminated Upper Sand ground water and surface water in seeps and on-site ponds, and contaminated surface soil and sediment in the Eastern Excavation Area

- Operable Unit 2: Contaminated surface and subsurface soil in the Western Excavation Area, ground water in the Middle Sand and underlying aquifers

- Operable Unit 3: Waste and contaminated sediment, surface soil, subsurface soil and Upper Sand ground water in the Eastern Excavation Area

The OU1 response actions have been implemented as described in section 2.0 (Site History and Enforcement Actions) of this ROD. These actions mitigated the potential for exposure to contaminated surface soil, sediment and surface water seeps through the installation of a perimeter fence to restrict Site access, and addressed a portion of the contaminant source through the removal of buried drums. The installation and operation of a shallow ground water recovery and treatment system under OU1 has eliminated the on-site surface water seeps and resulted in the removal of a small percentage of contaminants from the Upper Sand aquifer. However, contaminant concentrations in the shallow Upper Sand aquifer remain well above cleanup levels after five years of ground water recovery operations required by the OU1 ROD. Until the remaining sources of contamination are addressed, the contaminant concentrations in the shallow ground water are expected to remain well above the established cleanup levels for the foreseeable future.

Based on the studies conducted during OU2, EPA determined that no response actions were

needed to address the soil in the Western Excavation Area because contaminant levels do not present unacceptable risks to human health or the environment. However, EPA determined that measures were necessary to address the deeper ground water. OU2 provides for the monitoring of ground water in the Middle Sand and underlying aquifers and, should contaminant levels exceed the action levels specified in the OU2 ROD, the recovery and treatment of contaminated ground water (on-site) or the provision of point-of-use treatment (off-site). As discussed in section 2.0 of this ROD, response actions have been undertaken to address contaminated ground water in the Middle Sand aquifer. The monitoring of ground water quality in the Lower Sand and Bedrock aquifers was conducted for a period of five years and suspended in 1998 based on the monitoring data. However, EPA may require the monitoring of these aquifers to be resumed if, in the future, there are significant increases in ground water use in the vicinity of the Site or if other new information that supports a decision to resume monitoring of the Lower Sand and Bedrock aquifers becomes available.

The third operable unit, the subject of this ROD, will address the remaining waste and contaminated soil and sediment at the Eastern Excavation Area which represent a source of unacceptable direct contact risks or a principal threat to ground water. The vast majority of this material will be treated on-site. A small portion of the material which is not amenable to on-site treatment will be removed for off-site treatment and disposal. In addition, OU3 provides for the continued recovery and treatment of the Upper Sand ground water until the cleanup levels are met as well as engineering measures to accelerate the biodegradation of ground water contaminants which is already occurring at the Site. Finally, OU3 includes temporary land and ground water use restrictions to prevent exposure to contaminated media until the ground water cleanup levels are achieved. The third operable unit represents the final response action for this Site and addresses principal threats through the treatment or removal of soil, sediment and waste material which contain high concentrations of toxic substances.

5.0 SITE CHARACTERISTICS

5.1 Surface Features, Soil and Geology, and Hydrogeology

Surface Features and Resources. The Maryland Sand, Gravel and Stone Site is located in a transitional area between the Upper Atlantic Coastal Plain and the Piedmont Region at an elevation of 80 to 200 feet above mean sea level. The surrounding landscape is gently sloping woodland interspersed with open grassy areas. An unnamed tributary (the "western unnamed tributary") of Mill Creek flows through the Site in a southerly direction and enters a small pond and wetland area ("ponded wetland") at the southwest corner of the Eastern Excavation Area. The ponded wetland also receives treated ground water from the on-site ground water treatment plant via a lined rip-rapped channel. The western unnamed tributary joins the "eastern unnamed tributary" to Mill Creek several hundred meters southeast of the Site, and the combined branches join Mill Creek proper which flows in a southerly direction to its confluence with Little Elk Creek. In the southeast corner of the Site there is a small man-made pond (approximately 0.5 acres) and there is a low, damp area (approximately 1 acre) along in the eastern portion of the

southern boundary of the Site.

As a result of quarrying operations, the landscape was left deeply gouged, mounded and terraced. Nearly vertical bluffs created by the removal of earth exist on the west, north and east margins of the Eastern Excavation Area. The Western Excavation Area is also surrounded by steep bluffs on all sides. In general, rainfall in the Eastern and Western Excavation Areas is contained within each area, settling in depressions and small artificial basins. Some areas may percolate or dry up quickly while others may hold water for a time.

Within the Eastern Excavation Area, three depressions exist which have been identified as ponds (Pond 1, Pond 2 and Pond 3; see Figure 3) in various Site documents which were used for waste disposal. The presence of surface water in these depression areas appears to be seasonal and rainfall dependent. Historically, shallow ground water of the Upper Sand unit emerged as surface seeps in three locations within the Eastern Excavation Area. Seep 1 flowed from the Pond 1 area into the ponded wetland . Seep 2 was located in a wooded area east of Pond 2. Seep 3 was located in a sedge meadow west of Pond 3. The activity of the seeps ceased following implementation of the OU1 remedial measures (e.g., installation and operation of ground water recovery trenches).

The federally threatened bog turtle (Clemmys muhlenbergi) may be present on, or within the vicinity of, the Site. Except for occasional transient individuals, no other federally listed or proposed endangered or threatened species are known to exist at the Site. The Maryland Department of Natural Resources Wildlife and Heritage Division's Natural Heritage database includes a record for Grass-like Beakrush (*Rhynchospora globularis*) and Slender Blue Flag (*Iris prismatica*), both State endangered species, within the vicinity of the Site. These species could potentially occur on the Site, itself.

The Maryland Historical Trust concluded that activities at the Site would be unlikely to affect significant historic and archaeological resources.

Soil and Geology. The OU1 and OU2 studies indicate that the overburden soils consist of unconsolidated sands, gravels, silts and clays of the Potomac Group. Although the sediments exhibit marked lateral variations, there appear to be several laterally consistent lithologic units across the Site. These units are, from the top down:

- an upper sand and gravel ("Upper Sand") unit approximately 12 to 19 feet in thickness which appears to pinch out in the Eastern Excavation Area and is absent further east and south of this area;

- an upper silt and clay ("Upper Clay") unit approximately 10 to 15 feet in thickness which also appears to be limited to the Eastern Excavation Area;

- a middle sand ("Middle Sand") unit, approximately 20 feet thick;

- a middle/lower silt and clay ("Middle Clay") unit, approximately 20 feet thick; and

- a lower sand ("Lower Sand") unit, approximately 50 feet in thickness, which is present in the northeast and southwest but absent in the southeast portion of the Eastern Excavation Area.

Underlying the unconsolidated materials of the Potomac Group is a zone of weathered bedrock ("saprolite") which is approximately 10 to 95 feet thick. Beneath the saprolite is an igneous and metamorphic bedrock complex. The primary igneous rock types are granodiorite, gabbro and associated ultrabasic rocks. The primary metamorphic rock types consist of mica, chlorite schists and gneisses. Elevations of the top of the unweathered bedrock vary from 20 above mean sea level to 70 feet below mean sea level.

Hydrogeology. Information collected during the OU1 and OU2 remedial investigations indicates that four distinct, but related, aquifers exist beneath the Site. They are:

- a perched water table aquifer in the Upper Sand unit of the Eastern Excavation Area;

- a water table aquifer in the Middle Sand unit along the valley of the western unnamed tributary to Mill Creek;

- a partially confined aquifer that occurs in the Lower Sand unit; and

- an aquifer system within the bedrock and the overlying saprolite ("Bedrock aquifer").

Ground water in the Upper Sand aquifer is perched upon the Upper Clay unit and flows towards the west, southwest and southeast where it is captured by the ground water interceptor trenches which were installed along the perimeter of the Eastern Excavation Area during OU1. Ground water moves from the Upper Sand unit into the Middle Sand unit by leakage through the Upper Clay unit, through gaps in the Upper Clay unit and, historically, by way of the three surface seeps. The direction of ground water flow in the Middle Sand aquifer is generally to the east. Ground water from this aquifer has a surface expression in the tributaries to Mill Creek and moves downward to the Lower Sand unit by leakage through confining beds and through gaps in the Middle Clay unit. Ground water in the Lower Sand and Bedrock aquifers flows in a south-southwest direction. The ground water of the Potomac Group and the Bedrock aquifer is the local source of water for domestic, institutional and industrial uses.

5.2 Nature and Extent of Contamination

The nature and extent of contamination in certain areas and environmental media at the Site were evaluated during the earlier operable units (OU1 and OU2). This information is documented in the RODs and Administrative Record files for each of those operable units and is only briefly

summarized in this section of the OU3 ROD. Greater emphasis is placed here on information regarding the nature and extent of contamination obtained during the OU3 investigation at the Site.

5.2.1 Ground Water

Monitoring conducted in connection with OU1 indicates that the ground water of the Upper Sand unit is highly contaminated, primarily with VOCs (e.g., benzene, chlorobenzene, chloroethane, chloroform, 1,1-dichloroethane, 1,1-dichloroethene ("1,1-DCE"), cis-1,2-dichloroethene, methylene chloride, methyl ethyl ketone[1], tetrachloroethene ("PCE"), toluene, 1,1,1-trichloroethane ("TCA"), trichloroethene ("TCE"), vinyl chloride). The maximum total VOC concentrations in the Upper Sand ground water has been approximately 40 milligrams per liter in recent years. Monitoring conducted for OU2 shows that many of the same contaminants are present in the ground water of the Middle Sand aquifer, but generally at levels that are one to two orders of magnitude lower than the concentrations in the Upper Sand ground water. Until recently, contaminants potentially related to the Site had not been found at levels of concern in the ground water of the Lower Sand and Bedrock aquifers. However, in August of 2002, the Cecil County Health Department submitted water samples from 47 residential and institutional wells in the vicinity of the Site to the State laboratory for analysis for VOCs. Low levels of VOCs were found in 14 of these samples. Chloroform was found in13 of the samples; three of these samples also contained low levels of toluene and another contained a low level of methylene chloride. Low levels of naphthalene were found in an additional water sample. The level of chloroform found in a sample collected from one residential well exceeded the action level specified in the OU2 ROD for the provision of point-of-use treatment. Chloroform is a chemical of potential concern at the Site. However, the source of the chloroform in the residential well samples has not been determined. Chloroform may be produced during well disinfection due to the reaction of sodium hypochlorite with naturally-occurring materials in ground water. The other VOCs detected in the residential well water samples were present at concentrations that are below levels of concern.

During the OU3 RI/FS, studies were undertaken to evaluate the natural degradation of organic compounds in the Upper Sand aquifer. As documented in the January 2002 *Ground Water Biodegradation Screening Investigation Technical Memorandum*, there is adequate to strong evidence that biodegradation of ground water contaminants is occurring naturally in areas of the Upper Sand ground water contaminant plume that are located downgradient from the contaminant source areas.

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[1]Methyl ethyl ketone is also known as 2-butanone.

5.2.2 Soil, Pond and Seep Sediment, and Waste Material

Sampling during the OU1 RI indicated elevated levels of metals (arsenic, cadmium, chromium, lead and mercury), VOCs (chorobenzene, ethylbenzene, toluene, PCE, TCE, and xylenes) and semivolatile organic compounds ("SVOCs") (e.g., 1,4-dichlorobenzene, naphthalene, phthalates) in the sediments of Ponds 1, 2 and 3 in the Eastern Excavation Area. VOCs and SVOCs were also found in sediments in a sedge meadow located west of Pond 3. SVOCs were found in Seep 1 sediments. VOCs were found in surface soil samples collected from Ponds 1, 2 and 3, and high concentrations of phthalates were found in surface soil in Pond 2. Approximately1200 buried drums, many containing waste material, and two waste-filled cement mixer drums were identified and removed from the Buried Waste Area and Pond 2 in the Eastern Excavation Area during the OU1 response actions at the Site.

The possibility that a contaminant source existed in the Western Excavation Area was evaluated during the OU2 RI. Surface geophysical studies and the analysis of soil samples collected from depths of up to eight feet below ground surface revealed no evidence of a contaminant source in the Western Excavation Area. The OU2 human health risk assessment indicated no unacceptable risks for exposure to soil in the Western Excavation Area of the Site.

The OU3 RI/FS provided a conclusive evaluation of the nature and extent of contamination in the soil and sediment of the Eastern Excavation Area. The field investigation consisted of the following activities: 1) soil gas surveys in the Northern Depression Area and in the Area South of Pond 1 to augment soil gas data collected during the OU1 remedial design and assist in the identification of source areas; 2) surface geophysical surveys in Pond 1, Pond 2, Pond 3 and the Buried Waste Area to aid in the identification of source areas; 3) the installation of approximately 90 soil borings in potential source areas; 4) the collection of approximately 200 soil and sediment samples from potential source areas; 5) field analysis of the samples for TCL VOCs, TCL SVOCs, TAL inorganics and pesticides/PCBs in an on-site mobile lab; 6) confirmational laboratory analysis of 10 to 15 percent of the samples for TCL VOCs, TCL SVOCs, TAL inorganics and pesticides/PCBs; 7) application of the FLUTe™ Ribbon NAPL Sampler technology to evaluate the presence of non-aqueous phase liquid ("NAPL") in known source areas; and 8) collection of surface water, sediment and surface soil samples for laboratory analysis and bioassays in support of the OU3 ecological risk assessment. The locations of the OU3 investigation areas are shown in Figure 3.

The results of the OU3 soil characterization work and data assessments are documented in the October 1997 *Soil Investigation Report*, the March 2001 *Supplemental Soil Delineation Data Report,* the January 2002 *Remediation Technology Screening Technical Memorandum* and the June 2002 *Focused Feasibility Study* and other documents in the Administrative Record file, and are summarized below.

- Buried waste materials (e.g., brown to black elastic or rubbery material; dark, viscous liquid; light gray, glue-like material with fibrous strands; stained soil) were visually

observed in five of eleven areas evaluated during the OU3 Remedial Investigation (Figure 3): Pond 02, Pond 03, the Buried Waste Area, the Northern Depression Area, and the Soil Staging Area.

- NAPL was directly observed in the Buried Waste Area and the Northern Depression Area, primarily above the water table. Small globules of NAPL were observed throughout the soil column down to the basal clay unit in the Northern Depression Area. The chemicals found in the NAPL included acetone, benzene, 2-butanone, chlorobenzene, chloroform, 1,4-dichlorobenzene, 1,1-DCE, ethylbenzene, methylene chloride, 4-methyl-2-pentanone, toluene, PCE, TCA, TCE and xylenes.

- The unsaturated and saturated soils of the Upper Sand unit are contaminated primarily with VOCs, including benzene (at levels up to 2,300 milligrams per kilogram ("mg/kg")), chlorobenzene (at levels up to 270,000 mg/kg), 1,1-DCE (at levels up to 64 mg/kg), 1,2-dichloroethane (at levels up to 5 mg/kg), PCE (at levels up to 110,000 mg/kg), toluene (at levels up to 230,000 mg/kg), TCA (at levels up to 65,000 mg/kg), TCE (at levels up to 14,000 mg/kg) and vinyl chloride (at levels up to 970 micrograms per kilogram). The highest concentrations of VOC contaminants were found in the soil of the Northern Depression Area, Pond 2 and the Buried Waste Area. Metals (e.g., antimony, arsenic, barium, cadmium, chromium, lead, mercury, thallium and vanadium), pesticides (e.g., aldrin), polychlorinated biphenyls ("PCBs") (e.g., Aroclor-1242) and SVOCs (e.g., bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate and 1,4-dichlorobenzene) are also present in the soil and sediments of the Upper Sand unit, although these contaminants are less widespread and some were found only infrequently. Of particular concern are aldrin (39 mg/kg in Pond 2 surface soil/sediment), PCBs (40 mg/kg Aroclor-1242 in Pond 2 surface soil/sediment), antimony (up to 160 mg/kg in Pond 2 surface soil/sediment), arsenic (up to 570 mg/kg in Seep 1 sediment), chromium (up to 3,700 mg/kg in Pond 2 surface soil/sediment), cadmium (up to 640 mg/kg in Pond 2 surface soil/sediment), lead (up to 34,000 mg/kg in Pond 2 surface soil/sediment) and vanadium (up to 2,000 mg/kg in Pond 2 surface soil/sediment).

- Lead concentrations in areas of Pond 2 (including the Pond 2 Wet area), the Northern Depression Area and Pond 3 exceed the EPA screening level of 400 mg/kg for lead in soil.

5.2.3 Surface Water

Sampling during the OU1 RI indicated elevated levels of metals (arsenic, cadmium, chromium, lead, manganese and/or mercury) in surface water in Ponds 1, 2 and 3, surface seeps, the sedge meadow and the ponded wetland in the Eastern Excavation Area. VOCs (e.g., chlorobenzene, chloroform, trans-1,2-dichloroethene, methylene chloride, PCE, TCA, TCE) and SVOCs (aniline, phenols and phthalates) were also found in water collected from the ponds and the seeps but were not detected in water collected from the sedge meadow and the ponded wetland.

During the OU2 RI, surface water samples were collected from ponds in the Western Excavation Area, the ponded wetland in the Eastern Excavation Area, and the western unnamed tributary to Mill Creek. Only copper was found at levels of potential concern in the ponds and the upstream sample of the unnamed tributary; however, copper was not detected in the downstream samples.

5.3 Conceptual Site Model

The Conceptual Site Model (CSM) diagrams contaminant sources, contaminant release mechanisms and migration routes, exposure pathways, and potential human and ecological receptors (Figure 4). It documents what is known about human and environmental exposure under current and potential future Site conditions. The risk assessment and final response action for this Site are based on the CSM.

The CSM for the Site identifies buried waste and liquid wastes reportedly disposed of in on-site ponds as the primary sources of contamination. The contamination was released into soil and subsequently into air (through particulate and volatile emissions), ground water (via infiltration and percolation) and surface water and sediment (due to storm water runoff and discharge of contaminated ground water). Site receptors include: individuals who may be exposed to contaminants in ambient air, soil and ground water, and terrestrial and aquatic organisms that may be exposed to contaminants in soil, surface water and sediment.

6.0 CURRENT AND POTENTIAL FUTURE LAND USES

The Site is undeveloped and the Eastern Excavation Area is fenced and generally accessible only to on-site maintenance workers and occasional trespassers. Land use within the surrounding area includes a mix of residential, commercial and light industrial activities. The Property is zoned for residential use according to the zoning board of Cecil County, Maryland and the properties immediately adjacent to the Site are used for residential purposes or are zoned for residential use. In addition, U.S. Census Bureau data indicates that Cecil County has experienced significant growth in recent years. For these reasons, EPA considers residential use to be the reasonably anticipated future land use for the Site.

Public water is not available within the vicinity of the Site and area residents, businesses, institutions and industries rely on the ground water of the Middle Sand unit and the underlying aquifers as a water source. The ground water of the Upper Sand unit, where the highest contaminant levels are found, is not known to be used for residential purposes within the vicinity of the Site. This unit pinches out on-site and is unlikely to be used as a source of drinking water on-site. However, Site-related contaminants are also present in the ground water of the Middle Sand unit and have, in the past, been found in the underlying aquifers which are used as sources of drinking water.

7.0 SUMMARY OF SITE RISKS

A baseline human health risk assessment was conducted in order to estimate the probability and magnitude of potential adverse human health effects from exposure to contaminants in soil and sediment in the Eastern Excavation Area and ambient air, assuming no further response actions are undertaken. The probability and magnitude of the potential adverse health effects from exposure to contaminated ground water were estimated during the OU1 and OU2 baseline human health risk assessments, and were not re-evaluated for OU3. A baseline ecological risk assessment was conducted in order to identify any contaminants in soil, sediment and surface water within the Eastern Excavation Area with the potential to adversely affect ecological resources in the absence of further remedial measures. While the ecological risk assessment supports a decision of no further remedial action, the human health risk assessment provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the final remedial action at the Site. This section of the ROD summarizes the results of the baseline human health and ecological risk assessments.

7.1 Summary of Human Health Risk Assessment

A *Baseline Risk Assessment* and a *Baseline Risk Assessment Addendum* were prepared in order to determine the current and potential future effects of contaminants in ambient air and soil and sediment within the Eastern Excavation Area on human health in the absence of further cleanup actions at the Site. The *Baseline Risk Assessment* considered the effects of exposure to surface soil and sediment, as well as vapors emitted from the ground surface and the on-site air stripper. Because any development of the Site property for residential or other use would entail earth moving activities that would expose contaminated subsurface soils, EPA requested that the PRPs submit an addendum to the *Baseline Risk Assessment* in order to evaluate the potential future risks associated with exposure to contaminants in the subsurface soils. Each of these evaluations consisted of a four step process: 1) identification of chemicals of potential concern ("COPCs"), i.e., those which have the potential to cause adverse health effects; 2) an exposure assessment, which identified actual and potential exposure pathways, potentially exposed populations, and the magnitude of possible exposure; 3) a toxicity assessment, which identified the adverse health effects associated with exposure to each COPC and the relationship between the extent of exposure and the likelihood or severity of adverse effects; and 4) risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and non-carcinogenic risks. A summary of those aspects of the human health risk assessment which support the need for remedial action is discussed below. A more thorough description of all the exposure pathways evaluated in the risk assessment can be found in the May 2000 *Baseline Risk Assessment* and the August 2000 *Baseline Risk Assessment Addendum.*

7.1.1 Contaminants of Potential Concern

During the OU3 RI, 68 organic and inorganic chemicals were detected in surface soil and

sediment in the Eastern Excavation Area; 126 organic and inorganic chemicals were detected in subsurface soils in the Eastern Excavation Area; 40 VOCs were detected in flux chamber samples collected in order to estimate chemical emissions from soil into the atmosphere; 10 VOCs were determined to be present in the air emissions from the on-site air stripper operated in connection with OU1 and OU2 at the Site. Thirty of these chemicals were selected as COPCs for the *Baseline Risk Assessment* and 43 were selected as COPCs for the *Baseline Risk Assessment Addendum* based on comparison of the maximum actual or estimated concentration of each chemical in soil and air with risk-based screening levels. Tables 1 through 3 list the COPCs selected for the *Baseline Risk Assessment*: Tables 1 and 2 give the COPCs in surface soil and sediment; Table 3 lists the COPCs in air. Table 4 through12 list the COPCs in subsurface soil selected for the *Baseline Risk Assessment Addendum*. Tables 1 and 2 and Tables 4 through 12 also present the frequency of detection for each COPC and the exposure point concentration used to estimate the risk for each COPC. Generally, the 95 percent upper confidence limit ("UCL") on the arithmetic mean concentration for a chemical was used as the exposure point concentration. However, the maximum concentration was used as the exposure point concentration when a limited number of data points was available.

7.1.2 Exposure Assessment

Potential human health effects associated with exposure to the COPCs were estimated quantitatively or qualitatively through the evaluation of several actual or potential exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on current and potential future uses of the Property and other properties in proximity to the Site. The exposure scenarios evaluated in the *Baseline Risk Assessment* and the *Baseline Risk Assessment Addendum* are presented below.

7.1.2.1 Exposure Scenarios for the *Baseline Risk Assessment*

The *Baseline Risk Assessment* considered the effects of incidental ingestion of, and dermal contact with, surface soil in the Eastern Excavation Area and the inhalation of vapors emitted from the ground surface and the on-site air stripper. Because surface soil contamination in the small area of Pond 2 known as Pond 2 Wet was found to be substantially greater than the surface soil contamination at other locations within the Eastern Excavation Area, exposure to surface soil in this area was evaluated separately.

The exposure scenarios evaluated in the *Baseline Risk Assessment* were based on three potential future Site uses: restricted use (operation and maintenance of the OU1 and OU2 remedial components, i.e., the current Site use); residential use; and industrial use (e.g., manufacturing or warehousing). Six different exposure scenarios were developed in order to estimate risks for the following populations: 1) on-site maintenance workers; 2) off-site residents; 3) potential on-site residents; 4) potential on-site industrial workers; 5) trespassing children who live off-site ("site-wide trespassing children"); and 6) children who trespass in the Pond 2 Wet area ("Pond 2 trespassing children"). It was assumed that each of these populations is exposed to airborne

releases of VOCs from the ground surface and the on-site air stripper. With the exception of the off-site residents, it was assumed that each of these populations is also exposed to contaminated surface soils in the Eastern Excavation Area. Pond 2 trespassing children were assumed to be exposed to surface soils at Pond 2 Wet while playing in this area, and to surface soils within the remainder of the Eastern Excavation Area as hypothetical on-site residents. On-site maintenance workers, site-wide trespassing children, potential on-site residents and potential on-site industrial workers were assumed to be exposed to surface soils in all areas of the Eastern Excavation Area except the Pond 2 Wet area.

A number of assumptions are used in the risk assessment process to calculate the dose for each exposure pathway since it is seldom possible to measure a specific dose. The following assumptions were used to estimate reasonable maximum exposure for each of the six populations identified above:

On-site Maintenance Workers

- The on-site maintenance worker was assumed to have a body weight of 70 kilograms ("kg").
- The exposure duration was 25 years.
- The frequency of exposure to soil and air emissions was assumed to be 100 days per year ("days/yr").
- It was assumed that exposure to vapors occurs for 2 hours per day ("hrs/day").
- The soil ingestion rate was assumed to be 50 milligrams per day ("mg/day").
- The skin surface area for dermal contact was assumed to be 25 percent of the total body surface, i.e. 5,800 square centimeters ("cm^2").
- A soil-to-skin adherence factor of 0.04 milligrams per square centimeter ("mg/cm^2") was used.
- Because only a portion of the day is spent at the Site, it was assumed that the maintenance worker inhales 5.0 cubic meters per day ("m^3/day").

Off-site Residents

- The assumed body weight for children and adults was 15 kg (33 pounds) and 70 kg (154 pounds), respectively.
- The exposure duration for the off-site resident was divided between 6 years of childhood exposure and 24 years of adult exposure.
- The frequency of exposure to air emissions was assumed to be 24 hrs/day for 350 days/yr.
- The age-specific inhalation rates for children and adults were12 m^3/day and 20 m^3/day, respectively.

On-site Residents

- The assumed body weight for children and adults was 15 kg and 70 kg, respectively.

- The exposure duration for the on-site resident was divided between 6 years of childhood exposure and 24 years of adult exposure.
- The frequency of exposure to soil and air emissions was assumed to be 350 days/yr.
- It was assumed that exposure to vapors occurs for 24 hrs/day.
- The age-specific soil ingestion rates for children and adults were 200 mg/day and 100 mg/day, respectively.
- The child and adult age-specific skin surface areas for dermal contact were 2,000 cm^2 and 5,800 cm^2, respectively.
- A soil-to-skin adherence factor of 0.04 mg/cm^2 was used.
- The age-specific inhalation rates for children and adults were12 m^3/day and 20 m^3/day, respectively.

On-site Industrial Workers

- The on-site industrial worker was assumed to have a body weight of 70 kg.
- The exposure duration was 25 years.
- The frequency of exposure to soil and air emissions was assumed to be 250 days/yr.
- It was assumed that exposure to vapors occurs for 8 hrs/day.
- The soil ingestion rate was assumed to be 50 mg/day.
- The skin surface area for dermal contact was assumed to be 5,800 cm^2.
- A soil-to-skin adherence factor of 0.04 mg/cm^2 was used.
- It was assumed that the on-site industrial worker inhales 20 m^3/day.

Site-wide Trespassing Children

- Children ages 7 to 13 years were assumed to trespass on-site.
- The body weight of the trespassing child was assumed to be 31 kg.
- The exposure duration was 6 years.
- The frequency of exposure to soil and air emissions was assumed to be 30 days/yr.
- It was assumed that exposure to vapors occurs for 4 hrs/day.
- The soil ingestion rate was assumed to be 100 mg/day; 50 percent of the soil ingested was assumed to be derived from contaminant sources on-site.
- The skin surface area for dermal contact was assumed to be 3,500 cm^2, based on 25 percent of the total skin surface for a 7 to 13 year-old child.
- A soil-to-skin adherence factor of 0.04 mg/cm^2 was used.
- Because exposure was assumed to occur for 4 hrs/day, the inhalation rate was assumed to be 12.8 m^3/day.

Pond 2 Trespassing Children

It was assumed that the child of an on-site resident would be the most likely population to trespass in the area of the Eastern Excavation Area referred to as Pond 2 Wet. Exposure to mud

while trespassing in the Pond 2 Wet area constitutes the most significant exposure pathway for this population and the exposure assumptions for this pathway are summarized below.

- Children ages 7 to 13 years were assumed to trespass in the area of Pond 2 referred to as Pond 2 Wet.
- The body weight of the trespassing child was assumed to be 31 kg.
- The exposure duration was 6 years.
- The frequency of exposure to soil and air emissions was assumed to be 30 days/yr.
- It was assumed that exposure to vapors occurs for 4 hrs/day.
- The soil ingestion rate was assumed to be 100 mg/day; 50 percent of the soil ingested was assumed to be derived from contaminant sources on-site.
- The skin surface area for dermal contact was assumed to be 3,500 cm^2, based on 25 percent of the total skin surface for a 7 to 13 year-old child.
- A soil-to-skin adherence factor of 27 mg/cm^2 was used.
- Because trespassing at the Pond 2 Wet area was assumed to occur for 4 hrs/day, the inhalation rate was assumed to be 12.8 m^3/day.

Estimation of Air Concentrations:

The estimation of air concentrations is a two-step process, involving the development of emissions estimates and the modeling of atmospheric dispersion. Air concentrations used in the *Baseline Risk Assessment* include contributions from both the on-site source areas (Pond 2, Pond 3, the Buried Waste Area, and the Northern Depression Area) and the on-site air stripper.

Emission rates of the COPCs from on-site source areas were developed from the results of on-site flux chamber measurements. Estimates of emissions from the air stripper presently operating at the Site were developed based on concentrations of VOCs in influent water and the water flow rate to the air stripper. It was assumed that 100 percent of the VOCs detected in influent water samples would be emitted to the atmosphere.

The atmospheric concentrations of VOCs of interest at various receptor locations were estimated using EPA's Industrial Source Complex ("ISC3") dispersion model. Maximum on-site and off-site air concentrations, as well as average air concentrations on-site, were used in the *Baseline Risk Assessment* to estimate exposures.

7.1.2.2 Exposure Scenarios for the *Baseline Risk Assessment Addendum*

As stated above, EPA considers residential use to be the reasonably anticipated future land use for the Site. Because any development of the Property for residential or other use would entail earth moving activities that would expose contaminated subsurface soils, EPA requested that the PRPs submit an addendum to the *Baseline Risk Assessment* in order to evaluate the potential future risks associated with exposure to contaminants in subsurface soils in the Eastern Excavation Area. The *Baseline Risk Assessment Addendum* considered the effects of incidental

ingestion of, and dermal contact with, contaminated soils up to ten feet deep which were assumed to be brought to the surface during construction activities. The *Baseline Risk Assessment Addendum* also estimated the risks due to the inhalation of vapors which would be emitted from the contaminated subsurface soils once they were moved to the surface. Risks associated with exposure to soil contaminants in eight potential source areas (Pond 1, Pond 2, Pond 3, the Buried Waste Area, the Northern Depression Area, the Soil Staging Area, the Soil Piles, and the Area South of Pond 1) identified during the OU3 RI were calculated separately. Contaminated surface soil in the Pond 2 Wet area was not included in the assessment since this material was identified as presenting unacceptable risks in the *Baseline Risk Assessment*.

The exposure scenarios evaluated in the *Baseline Risk Assessment Addendum* were based on two potential future uses of the Eastern Excavation Area, residential use and industrial use. Two different exposure scenarios were developed in order to estimate risks for the following populations: 1) on-site residents; and 2) on-site industrial workers. The assumptions used to estimate reasonable maximum exposure for on-site residents and on-site industrial workers in the *Baseline Risk Assessment* were also used to estimate reasonable maximum exposure for these populations in the *Baseline Risk Assessment Addendum*.

Estimation of Air Concentrations:

Passive emissions rates were estimated for the COPCs in each of the eight source areas evaluated in the *Baseline Risk Assessment Addendum*. Two diffusion models were employed. The model presented by Jury, et al. (1990) was applied where contaminant concentrations in soil are below the saturation concentration. A different model, recommended for "Volatile Emissions from Surface Soils when NAPL is Present," and described in EPA's *Air/Superfund Technical Guidance Series: Guideline for Predictive Baseline Emissions Estimation for Superfund Sites*, 1996 (EPA-451/R-96-001), was used where the soil contaminant concentrations exceed the saturation concentration, i.e., where NAPL is present.

Atmospheric concentrations of VOCs were estimated using the Industrial Source Complex dispersion model in the short-term mode ("ISCST3"). The maximum air concentrations attributable to each source area were used to estimate exposures in the *Baseline Risk Assessment Addendum*.

7.1.3 Toxicity Assessment

Excess lifetime cancer risks were determined for each exposure pathway by multiplying a daily intake level by the chemical specific cancer potency factor. Cancer potency factors have been developed by EPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic substances. The resulting risk estimates are expressed in scientific notation as a probability (e.g., 1 X 10^{-6} or 1/1,000,000) and indicate (using this example), that an average individual is not likely to have greater than a one in a million chance of developing cancer over 70 years as a result of Site-related exposure to the compound at

the stated concentrations. All risks estimated represent an "excess lifetime cancer risk," or the additional cancer risk on top of that which we all face from other causes such as cigarette smoke or exposure to ultraviolet radiation from the sun. EPA's generally acceptable risk range for Site-related exposure is 10^{-4} to 10^{-6}. Current EPA practice considers carcinogenic risks to be additive when assessing exposure to multiple hazardous substances, or exposure via multiple pathways. A summary of the cancer toxicity data applied to the COPCs in the *Baseline Risk Assessment* is presented in Table 13. A summary of the cancer toxicity data applied to the COPCs in the *Baseline Risk Assessment Addendum* is presented in Table 14.

In assessing the potential for exposure to a chemical to cause adverse health effects other than cancer, a hazard quotient ("HQ") is calculated by dividing the daily intake level by the reference dose ("RfD") or other suitable benchmark. EPA has developed reference doses for many chemicals which represent a level of exposure that is expected to result in no adverse health effects. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that the potential for adverse health effects will not be underestimated. A HQ $\leq$ 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that harmful non-cancer effects from that chemical are unlikely. The Hazard Index ("HI") is generated by adding the HQs for all COPCs that affect the same target organ (e.g., liver) within or across those pathways by which the same individual may reasonably be exposed. An HI $\leq$ 1 indicates that harmful non-cancer health effects are not expected as a result of exposure to all of the COPCs within a single or multiple exposure pathway(s). A summary of the non-cancer toxicity data relevant to the COPCs in the *Baseline Risk Assessment* is presented in Table 13. A summary of the non-cancer toxicity data applied to the COPCs in the *Baseline Risk Assessment Addendum* is presented in Table 14.

7.1.4 Risk Characterization

7.1.4.1 *Baseline Risk Assessment*

For the populations and exposure scenarios considered in the *Baseline Risk Assessment*, the Pond 2 trespassing child was determined to be at the greatest risk of suffering adverse health effects due to exposure to Site contaminants. The excess lifetime cancer risk for the Pond 2 trespassing child is 3×10^{-3} (i.e., three extra cancers may occur for every 1,000 people exposed to Site contaminants under the conditions described for the Pond 2 trespassing child in the *Baseline Risk Assessment*). The chemicals that contribute most to this risk are aldrin (83 percent of total cancer risk) and PCE (8 percent of total cancer risk). The total HI for the Pond 2 trespassing child is 424. Several chemicals contribute to the total HI value, including aldrin (15 percent), PCBs (8 percent), and the metals antimony (24 percent), chromium (22 percent), cadmium (15 percent) and vanadium (7 percent). For both cancer and non-cancer health endpoints, dermal contact with soil in the Pond 2 Wet area accounted for more than 99 percent of the total risk to the Pond 2 trespassing child. Finally, lead concentrations in the surface soil of the Pond 2 Wet area exceed EPA's residential screening level of 400 mg/kg, indicating that there is a potential for adverse effects from exposure to lead in this area of the Site

For exposure to surface soil and air emissions outside the Pond 2 Wet area, the highest risks were calculated for an on-site resident. The excess lifetime cancer risk for an on-site resident is 8×10^{-6} (i.e., eight extra cancers may occur for every one million people exposed to Site contaminants under the conditions described for the on-site resident in the *Baseline Risk Assessment*) which is within the risk range considered acceptable by EPA. The total HI for an on-site resident is 0.4. Therefore, the on-site resident exposed to contaminated surface soil and air emissions is not expected to suffer non-cancer adverse health effects.

The excess lifetime cancer risks for the other exposure scenarios evaluated in the *Baseline Risk Assessment* were at or below 1.0×10^{-6}, and are considered to be acceptable. The total HI values for these exposure scenarios were all estimated to be below 0.1. Therefore, adverse non-cancer health effects are not expected.

Table 15 presents the cancer and non-cancer risk summaries for the Pond 2 trespassing child. Table 16 presents the risk summaries for the remaining populations and exposure scenarios considered in the *Baseline Risk Assessment*.

7.1.4.2 Baseline Risk Assessment Addendum

The *Baseline Risk Assessment Addendum* indicated that risks for potential on-site residents were generally two to three times greater than risks for potential on-site industrial workers. The results for the on-site residential exposure scenario are summarized in this ROD.

Contaminated soils in the Northern Depression Area, the Buried Waste Area, Pond 2 and Pond 3 were shown to present unacceptable risks for potential future on-site residents under the exposure conditions considered in the *Baseline Risk Assessment Addendum*. A summary of the risks and the contaminants of greatest concern is presented below.

The excess lifetime cancer risk due to exposure to soil in the Northern Depression Area is 1×10^{-2} (i.e., one additional cancer may occur for every 100 individuals exposed). Exposure to PCE accounts for more than 90 percent of this total cancer risk, primarily through ingestion of soil. Other chemicals contributing to the total cancer risk in the Northern Depression Area include TCE (4 percent of total cancer risk) 1,1-DCE (2 percent) and bis(2-chloroethyl)ether (1 percent). The total HI for exposure of an on-site resident to soil in the Northern Depression Area is 183. Chlorobenzene accounts for most (54 percent) of the total HI value; however, several other organic compounds contribute to the non-cancer adverse health effects, including PCE (24 percent of the HI), TCA (7 percent), TCE (5 percent), toluene (4 percent) and benzene (4 percent).

The excess lifetime cancer risk due to exposure to soil in the Buried Waste Area is 5×10^{-4} (i.e., five additional cancers may occur for every 10,000 individuals exposed). The chemicals that contribute most to this risk are 1,1-DCE (88 percent) and PCE (6 percent). The total HI is 2.2. Several chemicals contribute to the total HI value, including the organic compounds

chlorobenzene (33 percent), benzene (14 percent), TCA (13 percent), PCE (7 percent), 1,2,4-trichlorobenzene (6 percent) and TCE (5 percent) and the metals iron (8 percent) and vanadium (7 percent).

The excess lifetime cancer risk associated with exposure to soil in Pond 2 (not including surface soil in Pond 2 Wet) is 2 X 10^{-4} (i.e., two additional cancers may occur for every 10,000 individuals exposed). The chemicals that contribute most to this risk are 1,1-DCE (42 percent), PCE (27 percent), vinyl chloride (13 percent) and methylene chloride (7 percent). The total HI for the soil in Pond 2 is 2.6. The organic chemicals chlorobenzene (16 percent), PCE (11 percent), and benzene (14 percent) and the metals thallium (29 percent), iron (10 percent), and vanadium (5 percent) account for most of the total HI value.

The total estimated HI for exposure by an on-site resident to soils in Pond 3 is 4.7. Thallium, with an estimated Hazard Quotient of 2.9, contributed most to non-cancer risk. The excess lifetime cancer risk due to exposure to soil in Pond 3 is 7 X 10^{-5} (i.e., 7 additional cancers may occur for every 100,000 individuals exposed) and is within the risk range that EPA finds acceptable.

Lead concentrations in subsurface soils at Pond 2, Pond 3 and the Northern Depression Area exceed EPA's residential screening level of 400 mg/kg, indicating that there is a potential for adverse effects from exposure to lead in the future.

Tables 17 through 24 present the cancer and non-cancer risk summaries for the future on-site industrial worker and the future on-site resident.

7.1.5 Uncertainty in Risk Characterization

Risk assessment provides a systematic means of organizing, analyzing and presenting information on the nature and magnitude of risks posed by chemical exposures. Nevertheless, uncertainties are present in all risk assessments because of the quality of available data and the need to make assumptions and develop inferences based on incomplete information about existing conditions and future circumstances. Below is a brief discussion of the major uncertainties associated with the *Baseline Risk Assessment* and the *Baseline Risk Assessment Addendum*.

- Several of the chemicals that contribute significantly to the risks at the Eastern Excavation Area have toxicity values that have been withdrawn or are under review. Specifically, there is uncertainty associated with the oral and inhalation slope factor values for PCE and TCE; oral reference doses for 1,1,1-TCA, TCE, copper and iron; and inhalation reference doses for 1,1,1-TCA, 1,2-dichloroethane, and benzene. Furthermore, the oral reference dose for Aroclor-1242 used in the *Baseline Risk Assessment* is based on the toxicity value for Aroclor-1254.

- For areas with fewer than ten soil samples, estimates of exposure to chemicals in soil are based on maximum detected concentrations of COPCs that are assumed to be present throughout a given source area. This assumption was applied due to the lack of data to develop reliable, area-specific estimates of the 95 percent UCL concentrations of COPCs in these areas. The use of maximum detected concentrations could result in an overestimation of risk.

- In evaluating the potential for adverse noncancer effects, it was assumed that the effects from exposure to multiple chemicals is additive. Non-carcinogenic chemicals typically affect one or more target organs. The assumption that all non-carcinogenic chemicals affect the same target organ likely results in an overestimation of non-cancer risks.

- One of the models (Jury, et al., 1990) used in the *Baseline Risk Assessment Addendum* to estimate emissions of vapors from on-site soil relies on a number of conservative assumptions. Specifically, it is assumed that chemicals are distributed evenly throughout the soil column, which does not appear to be the case based on a review of the soil sampling data at the Site. Furthermore, both the Jury Model and the NAPL model account for soil vapor of individual chemicals but do not account for multi-chemical systems. Both assumptions will tend to result in an overestimation of emissions.

7.1.6 Material Presenting a Threat to Ground Water

As documented in the OU1 and OU2 RODs, contaminants are present in ground water at levels which present unacceptable cancer and non-cancer risks. Risks from exposure to contaminated ground water were not reevaluated in OU3. However, the relationship between soil contamination and ground water quality was evaluated in the OU3 *Focused Feasibility Study* and, as discussed below, soil action levels and soil treatment standards for the protection of ground water were calculated in order to further define the remedial action objectives for OU3.

7.1.7 Principal Threat Materials

The National Oil and Hazardous Substances Pollution Contingency Plan ("NCP") establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

For OU3 at the Maryland Sand, Gravel and Stone Site, principal threat materials have been defined as soil, sediment and waste materials that pose a cancer risk of 1.0×10^{-3} (one additional

cancer for every 1,000 individuals exposed to Site contaminants) or higher, or a HI of 100 or greater for current or potential future Site use. Soil, sediment and wastes in the Eastern Excavation Area which meet the definition of a principal threat based on direct contact with these materials are referred to as "Direct Contact Principal Threat" materials. Soil, sediment and wastes which have the potential to cause contaminant levels in ground water to pose a cancer risk of 1.0×10^{-3} or higher, or have a HI of 100 or greater, are referred to as "Ground Water Principal Threat" materials.

Soil, sediment and waste materials which, based on the direct contact and ground water exposure pathways, pose a cancer risk between one in 1,000 (1.0×10^{-3}) and one in 10,000 (1.0×10^{-4}), or have a HI between 1.0 and 100, are referred to, respectively, as "Direct Contact Low-level Threat" material and "Ground Water Low-level Threat" material. Any soil or waste in the Eastern Excavation Area containing lead levels greater than 400 mg/kg is also considered to be Direct Contact Low-level Threat material. However, contaminated materials located below the water table are not considered to be a direct contact threat for OU3 at this Site.

Preliminary action levels were developed to assist in the identification of soil, sediment and waste materials which constitute principal threats and low-level threats. The action levels for direct contact threats were derived from the *Baseline Risk Assessment* and the *Baseline Risk Assessment Addendum*. The action levels for ground water protection were derived using the methodology in EPA's *Soil Screening Guidance: User's Guide* (1996) for quantifying contaminant migration from soil to ground water (see Appendices C and D in the *Focused Feasibility Study*). The preliminary actions levels are presented in Table 25. If multiple contaminants are present, some material which would not be selected for remedial action based on a comparison of individual contaminant concentrations with the preliminary action levels may still meet the definitions of principal threat or low-level threat material given above. In such cases, EPA's identification of soil, sediment and waste material to be addressed under OU3 will be based on an assessment of the cumulative risks for the exposure pathways of concern..

The areas containing principal threat materials, and the estimated quantities of those materials, are given below:

- Contaminated soil and sediment in an area of Pond 2 known as Pond 2 Wet, the Northern Depression Area and Seep1 is considered to be Direct Contact Principal Threat material because the chemicals of concern are present at concentrations that would pose a substantial risk should direct contact with this material occur during current or potential future Site use. The excess carcinogenic risk to an individual exposed to this material would be greater than one in one thousand (1.0×10^{-3}). The HI for non-cancer adverse health effects exceeds 100. An estimated 1,000 cubic yards of soil and sediment constitute the Direct Contact Principal Threat material in these areas.

- The contaminated soils in the Northern Depression Area, Buried Waste Area, Pond 2 and Pond 3 are considered to be Ground Water Principal Threat material because the

chemicals of concern are present at concentrations that would impact ground water and pose a substantial risk to potential users of the ground water in the Upper Sand aquifer. The calculated excess lifetime cancer risk to an individual exposed to ground water contaminated by these materials would be greater than one in one thousand (1.0×10^{-3}). The HI for non-cancer adverse health effects would exceed 100. An estimated 30,000 cubic yards of soil in these areas constitute a principal threat to ground water.

7.2 Summary of Ecological Risk Assessment

7.2.1 Exposure and Effects Assessment

A screening level ecological risk assessment was conducted in order to identify potential direct and indirect (food web) toxicity to ecological receptors due to contaminants in surface soil, seep sediments, pond sediments, and the effluent from the on-site ground water treatment plant which is discharged to the ponded wetland on-site. Four assessment endpoints were identified: protection of 1) soil invertebrate communities, 2) plant communities, 3) aquatic communities, and 4) terrestrial vertebrate communities from adverse ecological changes related to contaminant exposure. The assessment endpoints and representative ecological receptors are presented in Table 26. Chemicals of potential ecological concern ("COPECs") were selected based on potential to bioaccumulate and comparison of exposure point concentrations ("EPCs") with ecological benchmarks for direct exposure to affected media. The COPECs for the *Baseline Ecological Risk Assessment* are presented in Table 27. Contaminant concentrations in the Pond 2 Wet sediments exceeded toxicological benchmarks in the screening level ecological risk assessment but were not further evaluated because of the likely removal of the Pond 2 Wet sediments in order to address human health concerns.

7.2.2 Risk Characterization

The potential risk of a COPEC to a specific receptor is estimated using the quotient method. An ecological Hazard Quotient ("HQ_e") is calculated as the ratio between the EPC and a toxicity reference value ("TRV"). To the extent possible a range of TRVs was selected to characterize the potential for harm to ecological receptors exposed to the COPECs. Two values were selected (when available) to represent 1) the lower potential range for possible adverse effects ("TRV_{low}"); and 2) the upper range for possible adverse effects ("TRV_{high}"). Low-end TRVs were typically No-Observed-Adverse-Effect-Levels ("NOAELs") and high-end TRVs were typically Lowest-Observed-Adverse-Effect-Levels ("LOAELs"). Although the HQ_e is not considered to be determinative, it can be used to evaluate how the measured or predicted exposure (EPC) relates to known levels at which adverse effects have or have not been demonstrated (LOAELs and NOAELs). The greater the departure of the ratio of EPC to TRV from unity, the greater the indication that a potential risk is present (when the HQ_e is much greater than 1) or there is little potential for risk (when the HQ_e is much less than 1). When HQ_e values are close to unity, the assumptions used in estimating the EPC and the uncertainty associated with the use or derivation of the TRV become highly significant in the interpretation of the results. The use of a range of

TRVs, when available, is particularly relevant in such situations. If a potential risk or effect is only suggested under the low-end TRV and not indicated using the high-end TRV, the "weight of evidence" is low. If the HQ_es for both the low- and high-end TRVs suggest a potential for adverse effects, there is a greater "weight-of-evidence."

The screening level ecological risk assessment indicated the following potential risks for direct toxicity to ecological receptors:

- Potential risks to soil detritivores were associated with exposure to iron and vanadium.
- Potential risks to terrestrial vegetation were associated with exposure to vanadium. However, there is uncertainty in this assessment because the TRV for vanadium was less than background soil concentrations in the United States. For selenium, the HQ_e values exceeded 1.0 using the TRV_{low}, but were less than 1.0 using the TRV_{high}.
- HQ_es for direct exposure of aquatic animals to barium and iron exceeded 1.0 using the TRV_{low}, but were less than 1.0 using the TRV_{high}.
- HQ_es for direct exposure of aquatic plants to iron in surface water exceeded 1.0 using the TRV_{low}, but were less than 1.0 using the TRV_{high}.
- The discharge of treated ground water to the ponded wetland has the potential to impact future use of this water body by benthic invertebrates due to the presence of iron in the effluent.

The screening level ecological risk assessment indicated the following potential risks for indirect (food web) impacts to ecological receptors:

- Potential risks to soil invertebrate eating birds (e.g., American robin) were associated with exposure to selenium. HQ_e values for barium and lead exceeded 1.0 using the TRV_{low}, but were less than 1.0 using the TRV_{high}.
- Potential risks to small mammals (e.g., rabbit and shrew) were associated with exposure to selenium and vanadium. The HQ_e value for barium exposure to the shrew exceeded 1.0 using the TRV_{low}, but was less than 1.0 using the TRV_{high}.

The results summarized above are presented in detail in the June 2000 *Screening Level Ecological Risk Assessment and Baseline Problem Formulation for the Maryland Sand, Gravel and Stone Site*.

Based on the results of the screening level risk assessment, additional surface soil and sediment sampling was conducted in order to obtain more representative estimates of EPCs. In addition, ecotoxicity tests were conducted using surface water, soils and sediments collected from the

Eastern Excavation Area in order to refine risk estimates, and an earthworm bioaccumulation study was conducted in order to refine food-web modeling assumptions. The results of these studies, summarized in the March 2001 *Baseline Ecological Risk Assessment*, indicate potential risk to small omnivorous mammals (e.g., shrews) as a result of exposure to selenium and vanadium (the hazard quotient is 1.7 for each) in surface soils within the Eastern Excavation Area. However, the concentrations of selenium and vanadium found in surface soil collected from the Eastern Excavation Area are similar to the concentrations of these metals in surface soil at nearby Elk Neck State Park, which was identified as a suitable background location, and are not readily attributable to the disposal of waste at the Site. No direct or indirect toxicity was indicated for the other groups evaluated in the *Baseline Ecological Risk Assessment* (soil detritivores, terrestrial and aquatic plants, aquatic animals, benthic invertebrates, and soil invertebrate-eating birds).

In summary, contaminant concentrations in the sediments within the Pond 2 Wet area exceed benchmarks for the protection of ecological receptors. In addition, the discharge of effluent from the treatment plant to the ponded wetland has the potential to adversely impact sediment and habitat in the ponded wetland due to the iron content of the effluent. Ecological receptors are unlikely to be adversely affected by Site-related contaminants outside of these two areas of concern.

8.0 REMEDIAL ACTION OBJECTIVES

Current trespassers at the Eastern Excavation Area are at risk from exposure to contaminated surface soil and sediment. Although trespassing on-site is restricted by perimeter fencing, warning signs and periodic security patrols, trespassing has not been completely eliminated. The results of the *Baseline Risk Assessment* indicate that current risks to trespassers in the Pond 2 Wet area and the Seep 1 area are above the acceptable risk levels established in the NCP.

Potential future Site residents or workers are at risk from exposure to contaminated subsurface soil. The *Baseline Risk Assessment Addendum* assumed that potential future Site residents or workers would come into contact with contaminants in subsurface soils exposed during Site development activities (e.g., excavation of soils to construct basements). Risks for potential future on-site residents exposed to contaminants in subsurface soils in the Northern Depression Area, Buried Waste Area, Pond 2 and Pond 3 are above the acceptable risk levels established in the NCP. Risks for potential future on-site workers exposed to contaminants in subsurface soils in the Northern Depression Area and the Buried Waste Area are above the acceptable levels.

Furthermore, contaminant levels in the ground water of the Upper Sand unit remain well above acceptable risk-based levels and federal and State drinking water standards. The migration of contaminants from the Upper Sand aquifer into the Middle Sand aquifer has caused the contaminant levels in the ground water of the deeper aquifer to exceed the action levels established in the OU2 ROD. Contaminated soil in the Northern Depression Area, Buried Waste Area, Pond 2 and Pond 3 have been identified as a principal threat to ground water at the Site.

In order to address the unacceptable risks at the Site and protect human health and the environment, the following remedial action objectives and associated cleanup levels have been established:

- protect human health for current and future Site use;
- address principal threats by treatment wherever practicable;
- prevent direct contact with contaminated soils or waste that would result in unacceptable levels of risk;
- mitigate further releases of hazardous substances to ground water;
- prevent exposure to contaminated ground water;
- restore ground water to its beneficial use; and
- prevent the exposure of ecological receptors to the Pond 2 Wet sediments.

In order to meet these objectives, the selected remedial action will target the following soils, sediments and waste materials for treatment or off-site disposal: [2]

- Ground Water Principal Threat material;
- Direct Contact Principal Threat material;
- Direct Contact Low-level Threat Material; and
- surface soils and sediments which pose a risk to ecological receptors.

These materials will be treated or removed in order to reduce risks for current and future Site use, including future residential use, to acceptable levels. Contaminated soils in the Eastern Excavation Area that are treated on-site shall meet the following objectives:

- reduce the excess lifetime cancer risk associated with current and potential future direct contact with soil to one in one million (1.0×10^{-6});[3]
- reduce the HI for current and potential future direct contact with soil to1.0;
- reduce the migration of contaminants from soils to ground water to levels that would not cause contaminant concentrations in the ground water of the Upper Sand aquifer to

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[2]A relatively small volume of the material to be addressed contains constituents (e.g., metals, pesticides or PCBs) which would not be effectively treated by the proposed on-site treatment technology, or has physical characteristics that may prevent effective on-site treatment. This material will be disposed of off-site.

[3]It is unlikely that soils below the water table would be excavated during construction activities if the Site were developed for future use, including future residential use. Therefore, soils which will be placed below the water table following treatment will not be required to meet the 1.0×10^{-6} cancer risk standard for direct contact exposure. Soils which will be placed below the water table will be treated in order to reduce the excess lifetime cancer risk for direct contact with the soil to one in ten thousand (1.0×10^{-4}), which is within the acceptable range established in the NCP.

present a cumulative excess lifetime cancer risk greater than one in ten thousand (1.0×10^{-4}), result in a HI greater than 1.0, or exceed Maximum Contaminant Levels ("MCLs") or non-zero Maximum Contaminant Level Goals ("MCLGs") established under the Safe Drinking Water Act; and

- comply with applicable or relevant and appropriate requirements ("ARARs") for the treatment of hazardous waste.

Based on these treatment objectives, preliminary treatment standards were derived for contaminants in soil, sediment and waste material. The standards to address direct contact risks were derived from the *Baseline Risk Assessment* and the *Baseline Risk Assessment Addendum*. The standards for ground water protection were derived using the methodology in EPA's *Soil Screening Guidance: User's Guide* (1996) for quantifying contaminant migration from soil to ground water (see Appendices C and D in the *Focused Feasibility Study*). In addition, the Treatment Standards for Hazardous Wastes specified in the RCRA Land Disposal Restrictions were identified as treatment standards for any soil to be excavated and land disposed.

The preliminary treatment standards for soils under the selected action are given in Table 28. Because material which meets the preliminary treatment standards for individual contaminants may not meet the cumulative risk standards specified above if multiple contaminants are present, EPA's determination regarding the attainment of the treatment objectives will be based on an assessment of the cumulative residual risk following the achievement of the preliminary treatment standards. The cumulative risks associated with direct contact with the treated material, and the use of Upper Sand ground water which may be impacted by the treated material, will be calculated. If necessary, the soil, sediment and waste material will be further treated in order to ensure that the final remediation levels meet the cumulative risk standards.

In order to achieve the remedial action objectives for ground water, the selected action will:

- continue the collection and treatment of the contaminated Upper Sand ground water which began under OU1 at the Site, until the ground water cleanup levels are attained throughout the Upper Sand aquifer;
- employ engineered measures in order to increase the rate of contaminant biodegradation in the Upper Sand ground water; and
- restrict on-site ground water use until the ground water cleanup levels are attained.

The recovery and treatment of the ground water in the Upper Sand aquifer will continue until MCLs and non-zero MCLGs given in Table 28.a are attained and the excess cancer risk associated with potential residential use of the ground water is reduced to one in ten thousand (1.0×10^{-4}) and the HI is reduced to1.0. The enhancement of the natural biodegradation processes in the Upper Sand aquifer is expected to accelerate the rate at which progress is made toward attaining the cleanup levels for the shallow ground water. Temporary ground water use restrictions will prevent exposure to ground water that would result in unacceptable human health risks.

With the exception of the "no action" alternative, each of the remedial alternatives presented in the *Focused Feasibility Study* addresses the soil, sediment and waste material (i.e., Ground Water Principal Threat material, Direct Contact Principal Threat material and Direct Contact Low-level Threat material) that is addressed by the selected alternative. Several of the remedial alternatives also address the Ground Water Low-level Threat material and several include containment of soil and waste material as a measure to control risks. The extent to which treatment, versus containment, is employed differs among the remedial alternatives. The treatment objectives for soil and waste material which would be contained following treatment are less stringent than the treatment objectives specified above for the selected alternative. The treatment objectives for the alternatives which include treatment of soil are presented in Table 2-11 of the *Focused Feasibility Study.*

With the exception of the no action alternative, each of the remedial alternatives considered in the *Focused Feasibility Study* also includes the continued collection and treatment of the Upper Sand ground water, and restricts the use of on-site ground water, until the ground water cleanup levels specified above are attained. For those alternatives that include on-site management of contaminated soil and waste material, the ground water cleanup levels would be met within the Upper Sand aquifer, beyond the boundaries of the containment system, only. The ground water cleanup standards would be met throughout the Upper Sand aquifer for those alternatives that utilize treatment of soil and waste material, rather than containment, to prevent further releases of hazardous substances to ground water.

9.0 SUMMARY OF REMEDIAL ALTERNATIVES

The alternatives which were considered for the cleanup of contaminated media for OU3 at the Maryland Sand, Gravel and Stone Site are discussed in detail in the *Focused Feasibility Study.* These remedial alternatives are summarized below and are numbered to correspond with the numbers in the *Focused Feasibility Study.* Figure 5 identifies the approximate areas which would be addressed by the remedial alternatives.

Alternative 1 - No Action

Estimated Capital Cost: $0
Estimated Present Worth Operation and Maintenance (O&M) Cost: $1,750,000
Estimated Present Worth Cost: $1,750,000

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated in order to establish a baseline for comparison with the other remedial alternatives. This alternative includes no additional remedial actions beyond those already selected in the OU1 and OU2 RODs for the Site. This alternative includes continued ground water monitoring for 30 years and periodic EPA Site reviews (at least every five years).

Alternative 2 - Removal of Direct Contact Principal Threat Material, Installation of a Cap and Barrier Wall, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $7,901,000[4]
Estimated Present Worth O&M Cost: $6,652,000
Estimated Present Worth Cost: $14,553,000

This alternative would include the excavation and off-site disposal of the Direct Contact Principal Threat material (approximately 500 cubic yards), including the Pond 2 Wet sediments identified as a potential threat to ecological receptors during the ecological risk assessment. The removal of this material would eliminate approximately two percent of the Ground Water Principal Threat volume. Alternative 2 would contain the remaining Ground Water Principal Threat material, the Ground Water Low-level Threat material and the Direct Contact Low-level Threat material with an approximately18-acre composite barrier (RCRA Subtitle C) cap in order to minimize the infiltration of precipitation and a subsurface barrier wall in order to restrict the lateral migration of ground water into the containment area. This alternative would also include the expansion of the existing shallow ground water interceptor trenches to connect trenches 1 and 2, and the continued collection and treatment of the shallow ground water until the ground water cleanup levels are met within the Upper Sand aquifer beyond the boundaries of the cap. Institutional controls would be put into place in order to prevent activities that would adversely affect the containment system or other components of the remedy, or which would result in unacceptable exposure risks. The area would be monitored in perpetuity to verify that the cap retains integrity and is not leaking and that the institutional controls remain effective.

Alternative 3a - Ex Situ Treatment (by LTTD) of Ground Water Principal Threat Material, Enhanced Biodegradation of Contaminants in Shallow Ground Water, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $15,119,000[5]
Estimated Present Worth O&M Cost: $8,395,000
Estimated Present Worth Cost: $23,514,000

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[4]EPA estimates that the costs for Alternative 2 are approximately $250,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed.

[5]EPA estimates that the costs for Alternative 3a are approximately $1,000,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed and to confirm the extent of the NAPL identified during the OU3 RI/FS.

This alternative includes excavation, and on-site treatment by low temperature thermal desorption ("LTTD")[6,7], of the Ground Water Principal Threat material, Direct Contact Principal Threat material, and Direct Contact Low-level Threat material, which comprises approximately 30,000 cubic yards of soil and waste. Approximately 1,000 cubic yards of material which would not be effectively treated on-site because of the properties of the contaminants or the soil matrix, including the Pond 2 Wet sediments which were identified as a potential threat to ecological receptors, would be treated and/or disposed of off-site. In addition, any NAPL identified during the design or implementation of this alternative would be recovered, to the extent practicable, for off-site treatment and/or disposal. The excavated areas would be backfilled with treated soil, and the disturbed areas would be covered with 2 feet of clean soil and revegetated. The OU1 shallow ground water recovery trench system would be expanded by connecting existing trenches 1 and 2. Inorganic nutrients, organic carbon, electron receptors and/or microbial cultures would be added to the saturated zone of the Upper Sand aquifer in order to enhance the contaminant biodegradation processes which are occurring naturally at the Site.[8] Shallow ground water would continue to be collected and treated until the ground water cleanup levels are attained throughout the Upper Sand aquifer. Three specific temporary institutional controls would be put into place in order to ensure the effectiveness of the remedial action. First, temporary land use restriction(s) would prohibit any activity which could interfere with the ground water pump and treat system.[9] Second, as recommended by the State, temporary land use restriction(s) would prohibit any activities that would interfere with the biodegradation and natural attenuation portions of the remedy, e.g., activities which reduce the influx of water in the Ground Water

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[6]Low temperature thermal desorption is a means to physically separate VOCs and some SVOCs from soil, sediment and waste without destroying the contaminants. Materials are heated to between 300°F and 600°F to volatilize water and contaminants. A carrier gas or vacuum system transports volatilized water and contaminants to a gas treatment system where they are removed from the off-gas.

[7]It is estimated that following LTTD treatment, approximately 2,600 cubic yards of material would not meet the standards for placement on-site above the water table due to the presence of bis(2-ethylhexyl)phthalate. This material would be segregated and staged for either on-site treatment at higher temperatures using high temperature thermal desorption, placement below the water table in order to address direct contact concerns, or transportation off-site for treatment and/or disposal.

[8]Additional studies would be conducted during remedial design in order to optimize the performance potential of the biodegradation component of Alternative 3a.

[9]The ground water pump and treat system is currently located in the Eastern Excavation Area. If the system is expanded, this restriction could include other areas in the vicinity of the Eastern Excavation Area.

Low-level Threat area (see Figure 5).[10] This temporary control has the added benefit of mitigating the risk of unacceptable exposures due to poor indoor air quality (e.g., in basements) resulting from contaminants present in Site soils and ground water. Third, temporary institutional controls would also be required to prevent the use of ground water for consumption and/or showering at the approximately 60-acre area within the fence (i.e., the Eastern Excavation Area). This control is necessary to protect people from unacceptable exposure during the ground water cleanup period. All three of these temporary institutional controls would remain in effect until the ground water cleanup levels are attained.

Alternative 3b - In Situ Treatment of Ground Water Principal Threat Material, Enhanced Biodegradation of Contaminants in Shallow Ground Water, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $15,062,000[11]
Estimated Present Worth O&M Cost: $8,395,000
Estimated Present Worth Cost: $23,457,000

This alternative includes the *in situ* treatment of the Ground Water Principal Threat material, Direct Contact Principal Threat material, and Direct Contact Low-level Threat material, which comprises approximately 30,000 cubic yards of soil and waste. This material would be treated either by chemical oxidation with shallow soil mixing, or thermally by resistive heating or steam injection and recovery. The selection of the technology for *in situ* treatment would be made during the design phase after the completion of laboratory and pilot scale studies. Approximately 1,000 cubic yards of material which would not be effectively treated on-site because of the properties of the contaminants or the soil matrix, including the Pond 2 Wet sediments which were identified as a potential threat to ecological receptors, would be treated and/or disposed of off-site. In addition, any NAPL identified during the design or implementation of this alternative would be recovered, to the extent practicable, for off-site treatment and/or disposal. Areas disturbed during excavation or on-site treatment would be covered with 2 feet of soil and revegetated. The OU1 shallow ground water recovery trench system would be expanded by connecting existing trenches 1 and 2. Inorganic nutrients, organic carbon, electron receptors

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[10]The Ground Water Low-level Threat area has been approximated in the *Focused Feasibility Study* using available sampling data. It would be further delineated after the full-scale sampling to be required during remedial design to ensure that all areas within the definition of Ground Water Low-level Threat are included in the temporary land use restriction but that no additional land is unnecessarily restricted.

[11]EPA estimates that the costs for Alternative 3b are approximately $1,000,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed and to confirm the extent of the NAPL identified during the OU3 RI/FS.

and/or microbial cultures would be added to the saturated zone of the Upper Sand aquifer in order to enhance the contaminant biodegradation processes which are occurring naturally at the Site.[12] Shallow ground water would continue to be collected and treated until the ground water cleanup levels are attained throughout the Upper Sand aquifer. Three specific temporary institutional controls would be put into place in order to ensure the effectiveness of the remedial action. First, temporary land use restriction(s) would prohibit any activity which could interfere with the ground water pump and treat system. Second, as recommended by the State, temporary land use restriction(s) would prohibit any activities that would interfere with the biodegradation and natural attenuation portions of the remedy (e.g., activities which reduce the influx of water in the Ground Water Low-level Threat area).[13] This temporary control has the added benefit of mitigating the risk of unacceptable exposures due to poor indoor air quality (e.g., in basements) resulting from contaminants present in Site soils and ground water. Third, temporary institutional controls would also be required to prevent the use of ground water for consumption and/or showering at the 60-acre area within the fence. This control is necessary to protect people from unacceptable exposure during the ground water cleanup period. All three of these temporary institutional controls would remain in effect until the ground water cleanup levels are attained.

Alternative 3c - Ex Situ Treatment (by LTTD) of Ground Water Principal Threat Material above the Water Table, In Situ Treatment (by Chemical Oxidation) of Ground Water Principal Threat Material Below the Water Table, Enhanced Biodegradation of Contaminants in Shallow Ground Water, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $12,851,000[14]
Estimated Present Worth O&M Cost: $8,395,000
Estimated Present Worth Cost: $21,246,000

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[12]Additional studies would be conducted during remedial design in order to optimize the performance potential of the biodegradation component of Alternative 3b.

[13]The Ground Water Low-level Threat area has been approximated in the *Focused Feasibility Study* using available sampling data. It would be further delineated after the full-scale sampling to be required during remedial design to ensure that all areas within the definition of Ground Water Low-level Threat are included in the temporary land use restriction but that no additional land is unnecessarily restricted.

[14]EPA estimates that the costs for Alternative 3c are approximately $1,000,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed and to confirm the extent of the NAPL identified during the OU3 RI/FS.

This alternative combines the components of Alternatives 3a and 3b to include excavation and on-site LTTD[15] of the Ground Water Principal Threat material, the Direct Contact Principal Threat material and the Direct Contact Low-level Threat material located above the water table (approximately 23,000 cubic yards of soil and waste), and *in situ* chemical oxidation of the Ground Water Principal Threat material below the water table (approximately 7,000 cubic yards of soil and waste). Approximately 1,000 cubic yards of material which would not be effectively treated on-site because of the properties of the contaminants or the soil matrix, including the Pond 2 Wet sediments which were identified as a potential threat to ecological receptors, would be treated and/or disposed of off-site. In addition, any NAPL identified during the design or implementation of this alternative would be recovered, to the extent practicable, for off-site treatment and/or disposal. The excavated areas would be backfilled with treated soil, and the disturbed areas would be covered with 2 feet of clean soil and revegetated. The OU1 shallow ground water recovery trench system would be expanded by connecting existing trenches 1 and 2. Inorganic nutrients, organic carbon, electron receptors and/or microbial cultures would be added to the saturated zone of the Upper Sand aquifer in order to enhance the contaminant biodegradation processes which are occurring naturally at the Site.[16] Shallow ground water would continue to be collected and treated until the ground water cleanup levels are attained throughout the Upper Sand aquifer. Three specific temporary institutional controls would be put into place in order to ensure the effectiveness of the remedial action. First, temporary land use restriction(s) would prohibit any activity which could interfere with the ground water pump and treat system. Second, as recommended by the State, temporary land use restriction(s) would prohibit any activities that would interfere with the biodegradation and natural attenuation portions of the remedy (e.g., activities which reduce the influx of water in the Ground Water Low-level Threat area).[17] This temporary control has the added benefit of mitigating the risk of unacceptable exposures due to poor indoor air quality (e.g., in basements) resulting from contaminants present in Site soils and ground water. Third, temporary institutional controls would also be required to prevent the use of ground water for consumption and/or showering at

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[15]It is estimated that following LTTD treatment, approximately 2,600 cubic yards of material would not meet the standards for placement on-site above the water table due to the presence of bis(2-ethylhexyl)phthalate. This material would be segregated and staged for either on-site treatment at higher temperatures using high temperature thermal desorption, placement below the water table in order to address direct contact concerns, or transportation off-site for treatment and/or disposal.

[16]Additional studies would be conducted during remedial design in order to optimize the performance potential of the biodegradation component of Alternative 3c.

[17]The Ground Water Low-level Threat area has been approximated in the *Focused Feasibility Study* using available sampling data. It would be further delineated after the full-scale sampling to be required during remedial design to ensure that all areas within the definition of Ground Water Low-level Threat are included in the temporary land use restriction but that no additional land is unnecessarily restricted.

the approximately 60-acre area within the fence. This control is necessary to protect people from unacceptable exposure during the ground water cleanup period. All three of these temporary institutional controls would remain in effect until the ground water cleanup levels are attained.

Alternative 4a - Ex Situ Treatment (by LTTD) of Ground Water Principal Threat Material, Installation of a Cap and Barrier Wall, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $19,232,000[18]
Estimated Present Worth O&M Cost: $6,652,000
Estimated Present Worth Cost: $25,884,000

Alternative 4a includes the excavation, on-site treatment by LTTD, and backfilling of essentially the same material (approximately 30,000 cubic yards of soil and waste) that would be addressed in this manner by Alternative 3a.[19] Approximately 1,000 cubic yards of material which would not be effectively treated on-site and any identified NAPL would be disposed of off-site, as in Alternative 3a. This alternative differs from Alternative 3a in that it does not utilize and enhance the contaminant biodegradation processes that are naturally occurring in the ground water of the Upper Sand aquifer. Instead, Alternative 4a would contain the Ground Water Low-level Threat area with an approximately18-acre composite barrier (RCRA Subtitle C) cap in order to minimize the infiltration of precipitation and a subsurface barrier wall in order to restrict the lateral migration of ground water into the containment area. This alternative would include the expansion of the existing shallow ground water interceptor trenches to connect trenches 1 and 2, and the continued collection and treatment of the shallow ground water until the ground water cleanup levels are met within the Upper Sand aquifer beyond the boundaries of the cap. Institutional controls would be put into place in order to prevent activities that would adversely affect the containment system or other components of the remedy, or which would result in

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[18]EPA estimates that the costs for Alternative 4a are approximately $500,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed and to confirm the extent of the NAPL identified during the OU3 RI/FS.

[19]Alternative 4a calls for the on-site treatment of principal threat material, only, and unlike Alternative 3a would not require the treatment of any Direct Contact Low-level threat material that may be identified outside the Ground Water Principal Threat area during the remedial design. Alternative 4a would prevent exposure to any such material through containment measures and permanent institutional controls. The estimated volume of material to be treated under Alternative 3a is the same as the estimated volume to be treated under Alternative 4a because available data (see Appendix E of the *Focused Feasibility Study)* suggests that soils and waste materials which constitute a Direct Contact Low-level Threat are contained within the Ground Water Principal Threat volume.

unacceptable exposure risks. The area would be monitored in perpetuity to verify that the cap retains integrity and is not leaking and that the institutional controls remain effective.

Alternative 4b - In Situ Treatment of Ground Water Principal Threat Material, Installation of a Cap and Barrier Wall, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $18,823,000[20]
Estimated Present Worth O&M Cost: $6,652,000
Estimated Present Worth Cost: $25,475,000

Alternative 4b includes the *in situ* chemical oxidation or thermal treatment of essentially the same material (approximately 30,000 cubic yards of soil and waste) that would be addressed in this manner by Alternative 3b.[21] Approximately 1,000 cubic yards of material which would not be effectively treated on-site and any identified NAPL would be disposed of off-site, as in Alternative 3b. This alternative differs from Alternative 3b in that it does not utilize and enhance the contaminant biodegradation processes that are naturally occurring in the ground water of the Upper Sand aquifer. Instead, Alternative 4b would contain the Ground Water Low-level Threat area with an approximately18-acre composite barrier (RCRA Subtitle C) cap in order to minimize the infiltration of precipitation and a subsurface barrier wall in order to restrict the lateral migration of ground water into the containment area. This alternative would include the expansion of the existing shallow ground water interceptor trenches to connect trenches 1 and 2, and the continued collection and treatment of the shallow ground water until the ground water cleanup levels are met within the Upper Sand aquifer beyond the boundaries of the cap. Institutional controls would be put into place in order to prevent activities that would adversely affect the containment system or other components of the remedy, or which would result in unacceptable exposure risks. The area would be monitored in perpetuity to verify that the cap

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[20]EPA estimates that the costs for Alternative 4b are approximately $500,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed and to confirm the extent of the NAPL identified during the OU3 RI/FS.

[21]Alternative 4b calls for the on-site treatment of principal threat material, only, and unlike Alternative 3b would not require the treatment of any Direct Contact Low-level threat material that may be identified outside the Ground Water Principal Threat area during the remedial design. Alternative 4b would prevent exposure to any such material through containment measures and permanent institutional controls. The estimated volume of material to be treated under Alternative 3b is the same as the estimated volume to be treated under Alternative 4b because available data (see Appendix E of the *Focused Feasibility Study)* suggests that soils and waste materials which constitute a Direct Contact Low-level Threat are contained within the Ground Water Principal Threat volume.

retains integrity and is not leaking and that the institutional controls remain effective.

Alternative 5 - Ex Situ Treatment (by LTTD) of Ground Water Principal Threat and Low-level Threat Material, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System

Estimated Capital Cost: $71,863,000[22]
Estimated Present Worth O&M Cost: $6,213,000
Estimated Present Worth Cost: $78,076,000

This alternative is essentially identical to Alternative 3a, except that this alternative includes the excavation and *ex situ* treatment of a much larger volume of material (i.e., the Ground Water Low-level Threat material, in addition to the Ground Water Principal Threat material, Direct Contact Principal Threat material and Direct Contact Low-level Threat material), and does not include a component of enhanced biodegradation of the contaminants in the shallow ground water. Specifically, this alternative includes the excavation and on-site LTTD[23] of approximately 340,000 cubic yards of soil and waste materials. Approximately 1,000 cubic yards of material that would not be effectively treated on-site because of the properties of the contaminants or the soil matrix, including the Pond 2 Wet sediments which were identified as a potential threat to ecological receptors, would be disposed of off-site. In addition, any NAPL identified during the design or implementation of this alternative would be recovered, to the extent practicable, for off-site treatment and/or disposal. The excavated areas would be backfilled with treated soil, covered with 2 feet of clean soil and revegetated. The OU1 shallow ground water recovery trench system would be expanded by connecting existing trenches 1 and 2. Shallow ground water would continue to be collected and treated until the ground water cleanup levels are attained throughout the Upper Sand aquifer. Temporary institutional controls would be put into place in order to prevent activities that would adversely affect the components of the ground water recovery system and in order to prevent the use of ground water for consumption and/or showering until the ground water cleanup levels are attained.

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[22]EPA estimates that the costs for Alternative 5 are approximately $250,000 greater than the estimate provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed.

[23]It is estimated that following LTTD treatment, approximately 2,600 cubic yards of material would not meet the standards for placement on-site above the water table due to the presence of bis(2-ethylhexyl)phthalate. This material would be segregated and staged for either on-site treatment at higher temperatures using high temperature thermal desorption, placement below the water table in order to address direct contact concerns, or transportation off-site for treatment and/or disposal.

10.0 EVALUATION OF ALTERNATIVES

The eight remedial alternatives described above were evaluated in detail to determine which would best meet the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, ("CERCLA") and the NCP, and achieve the remedial action objectives identified in section 8.0 of this ROD. EPA uses the nine criteria set forth in the NCP, 40 CFR. §300.430(e)(9)(iii), to evaluate remedial alternatives. The first two criteria (overall protection of human health and the environment, and compliance with ARARs) are threshold criteria. The selected remedy must meet both of these threshold criteria (except when an ARARs waiver is invoked). The next five criteria (long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost) are the primary balancing criteria. The remaining two criteria (state and community acceptance) are referred to as modifying criteria and are taken into account after public comment is received on the Proposed Remedial Action Plan.

The following discussion summarizes the evaluation of the eight remedial alternatives developed for OU3 at the Site against the nine evaluation criteria.

Overall Protection of Human Health and the Environment

A primary requirement of CERCLA is that the selected remedial action be protective of human health and the environment. A remedy is protective if it reduces to acceptable levels current and potential risks associated with each exposure pathway at a site.

Alternative 1 (No Action) contains no provisions for preventing exposure to contamination, and is not protective of human health and the environment. Because Alternative 1 does not satisfy the threshold criterion of protectiveness it will not be considered further in this analysis.

Alternatives 2 through 5 would provide adequate protection of human health and the environment by eliminating, reducing or controlling risk through treatment, engineering controls and/or institutional controls. Each of these alternatives would prevent exposure to contaminated ground water through the implementation of ground water use restrictions. In addition, they would provide for the continued collection and treatment of ground water in the Upper Sand aquifer which would diminish the migration of contaminants from the Upper Sand aquifer into the Middle Sand and underlying aquifers and prevent the re-emergence of surface water seeps which existed prior to the implementation of ground water recovery operations at the Site.

Alternative 2 would provide protection against direct contact risk through containment of the majority of the impacted material and the implementation of permanent land use restrictions, as well as the excavation and off-site disposal or treatment of the Direct Contact Principal Threat material. The cap and barrier wall provided by Alternative 2 would also reduce the migration of contaminants from soil to ground water by minimizing the infiltration of precipitation and inhibiting the lateral movement of ground water into the area of impacted soils. Alternatives 3a,

3b and 3c would provide protection against direct contact risk through on-site treatment of the Direct Contact Low-level Threat material and Direct Contact Principal Threat material in order to achieve acceptable risk-based levels.[24] These alternatives would reduce the migration of contaminants from soil and waste material into ground water through the on-site treatment of the Ground Water Principal Threat material, which constitutes the most substantial continuing source of ground water contamination at the Site.[25] Alternatives 3a, 3b and 3c would accelerate the rate at which progress is made toward the attainment of cleanup levels in the shallow ground water by promoting naturally occurring contaminant biodegradation processes at the Site. Alternatives 4a and 4b would provide protection against direct contact risk through a combination of on-site treatment of the Direct Contact Principal Threat material, treatment or containment of the Direct Contact Low-level Threat material and the implementation of permanent land use restrictions.[26] These alternatives would reduce the migration of contaminants from soil and waste material into ground water through the on-site treatment of the Ground Water Principal Threat material and containment of the Ground Water Low-level Threat material.[27] Alternative 5 would provide protection against direct contact risk through on-site treatment of the Direct Contact Low-level Threat material and the Direct Contact Principal Threat material in order to achieve acceptable risk-based levels.[28] This alternative would reduce the migration of contaminants from soil and waste material into ground water through the on-site treatment of the Ground water Low-level Threat material, in addition to the Ground Water Principal Threat material.[25]

Alternatives 2 through 5 would protect ecological receptors at the Site by the excavation and off-site disposal or treatment of the Pond 2 Wet sediments, which were found to present an unacceptable risk to ecological receptors.

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[24]Direct Contact Principal Threat material and Direct Contact Low-level Threat material which could not be effectively treated on-site would be excavated for off-site treatment and/or disposal.

[25]Ground Water Principal Threat material which could not be effectively treated on-site would be excavated for off-site treatment and/or disposal.

[26]Direct Contact Principal Threat material which could not be effectively treated on-site would be excavated for off-site treatment and/or disposal.

[27]Ground Water Principal Threat material which could not be effectively treated on-site would be excavated for off-site treatment and/or disposal.

[28]Direct Contact Principal Threat material and Direct Contact Low-level Threat material which could not be effectively treated on-site would be excavated for off-site treatment and/or disposal.

Compliance with ARARs

This criterion addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements ("ARARs") of federal and state environmental and facility siting laws and/or will provide grounds for invoking a waiver.

The MCLs and non-zero MCLGs for public drinking water supplies established under the Safe Drinking Water Act are considered to be relevant and appropriate standards for ground water cleanup under the Superfund program. The concentrations of several contaminants in the ground water of the Upper Sand aquifer exceed MCLs. Each of Alternatives 2 through 5 would achieve MCLs and non-zero MCLGs for the relevant ground water contaminants within the area of attainment over time.

Alternatives 2 through 5 would result in the continued release of VOC emissions from the on-site air stripper and would comply with State regulations governing air emissions. Alternatives 2 through 5 also entail the on-site discharge of treated ground water to the western unnamed tributary of Mill Creek. In order to support the designated uses of Mill Creek, the discharge of treated ground water in each of these alternatives would result in in-stream compliance with MCLs, non-zero MCLGs and State water quality standards.

There is enough existing information regarding the wastes disposed of at the Eastern Excavation Area to determine that many of these wastes are listed hazardous wastes within the meaning of RCRA. Furthermore, it is EPA's Best Professional Judgment that most of the contaminated soil that is to be treated is also "characteristic" waste within the meaning of RCRA Therefore, for activities that constitute treatment, storage or disposal of the contaminated media, RCRA requirements are applicable. In addition, for Alternatives 2, 4a and 4b, EPA views the RCRA landfill cap requirements as relevant and appropriate.

The treatment of soil and waste materials in Alternatives 3a through 5 may result in the potential generation of hazardous waste. On-site handling of generated hazardous waste would comply with standards applicable to generators and transporters of hazardous waste. Alternatives 3a, 3c, 4a and 5 involve the excavation and on-site treatment of soil that contains hazardous waste and the backfilling of soil that meets the guidance criteria of EPA's "Contained-In" Policy.[29] The

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[29]If contaminated environmental media contain hazardous waste, they are subject to all applicable RCRA requirements until they no longer contain hazardous waste. EPA considers contaminated environmental media to no longer contain hazardous waste: (1) when they no longer exhibit a characteristic of hazardous waste; and (2) when concentrations of hazardous constituents from listed hazardous wastes are below health-based levels. Generally, contaminated environmental media that do not, or no longer, contain hazardous waste are not subject to any RCRA requirements; however, in some circumstances, contaminated environmental media that contained hazardous waste when first generated (i.e., first removed from the land, or area of contamination) remain subject to LDR treatment requirements even

federal land disposal restrictions would apply to any on-site disposal of contaminated media which either contains, or no longer contains, hazardous waste. Any off-site disposal of contaminated media or hazardous waste from the Site would comply with all local, state and federal requirements in effect at the time. Any on-site treatment or storage of hazardous wastes in Alternatives 3a through 5 would comply with State standards for owners and operators of hazardous waste treatment, storage and disposal facilities identified as ARARs.

The on-site thermal treatment of soil and waste material under Alternatives 3a through 5 would comply with federal air emission standards for process vents and equipment leaks. In Alternatives 3a, 3c, 4a and 5, the thermal desorption unit would be operated in accordance with the substantive requirements of regulations for owners and operators of hazardous waste treatment, storage and disposal facilities that treat hazardous waste in miscellaneous units, provided that the thermal destruction of hazardous waste does not occur. Otherwise, the thermal desorption unit would be operated in accordance with the substantive requirements for thermal destruction of hazardous waste.

The capping of contaminated soil and waste material under Alternatives 2, 4a and 4b would comply with State closure requirements for hazardous waste landfills identified as ARARs.

A complete list of ARARs for the remedial alternatives evaluated for OU3 at the Site is presented in Table 29.

Long-term Effectiveness and Permanence

The evaluation of alternatives under this criterion considers the ability of an alternative to maintain protection of human health and the environment over time. The evaluation takes into account the residual risk remaining from untreated waste at the conclusion of remedial activities as well as the adequacy and reliability of containment systems and institutional controls.

Alternatives 2 through 5 include the excavation and off-site disposal of the Direct Contact Principal Threat material and would permanently eliminate the risk that would result from exposure to this material from the Site.[30]

Alternative 2 would use containment (cap and subsurface barrier wall) to prevent exposure to Direct Contact Low-level Threat material and to minimize the migration of contaminants from the Ground Water Principal Threat material and the Ground Water Low-level Threat material into ground water. A properly installed and maintained cap and barrier wall would provide adequate long-term isolation of materials which present a relatively low-level threat. However,

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after they "no longer contain" hazardous waste.

[30]Any Direct Contact Principal Threat material that is amenable to on-site treatment may be treated on-site under Alternatives 3a through 5.

containment measures may be less effective in controlling materials that are highly toxic or highly mobile, including the NAPL which is present at the Site. This alternative would require permanent land use restrictions and perpetual maintenance activities in order to ensure the long-term effectiveness and permanence of the containment system.

Alternatives 3a through 5 would provide greater long-term effectiveness and permanence than Alternative 2 through the treatment of 30,000 to 340,000 cubic yards of soil and waste material in order to effect a substantial and permanent reduction in on-site contaminant concentrations. The treatment of the Ground Water Principal Threat material under Alternatives 3a through 3c would permanently eliminate this material as a source of unacceptable levels of ground water contamination in the Upper Sand aquifer. The treatment of the Direct Contact Low-level Threat material under each of these alternatives would permanently remove contaminants from the Site and, for Alternatives 3a, 3b, 3c and 5, eliminate unacceptable risks due to direct contact with soils in the Eastern Excavation Area. However, contaminant concentrations in the untreated soils (e.g., the Ground Water Low-level Threat material) may present a source of unacceptable indoor air quality should the Site be developed for residential use in the future, and engineering and institutional controls would be required in order to reduce any such risks to acceptable levels. Alternatives 3a through 3c would also enhance the rate of naturally occurring contaminant biodegradation processes in shallow ground water. These processes are already resulting in the removal, through destruction, of the contaminants in ground water downgradient from the source areas. Alternatives 4a and 4b utilize a combination of treatment to permanently remove contaminants from the Ground Water Principal Threat material and containment as a control for the Ground Water Low-level Threat material and any remaining Direct Contact Low-level Threat material. Because Alternatives 4a and 4b would utilize containment to control the residual risks posed by the treated material, the risk-based treatment standards for soil and waste materials under these alternatives are less stringent than the risk-based treatment standards for these materials under Alternatives 3a through 3c. Alternatives 4a and 4b would require permanent land use restrictions and perpetual maintenance activities in order to ensure the long-term effectiveness and permanence of the containment system. Alternative 5 provides the highest degree of contaminant removal from the Site through the active treatment of both the Ground Water Principal Threat material and the Ground Water Low-level Threat material to acceptable risk-based standards. The residual risks posed by the treated soil and waste material for each of Alternatives 3a through 5 are presented in Table 2-11 of the *Focused Feasibility Study*.

Alternatives 2 though 5 would reduce the risks that would result from the use of ground water located within the area of attainment to acceptable levels through the collection and treatment of ground water. Under Alternatives 3a through 3c and Alternative 5, the ground water cleanup levels would be attained throughout the Upper Sand aquifer. Restrictions on ground water use could be eliminated once the ground water cleanup levels were achieved for each of these alternatives. The ground water cleanup levels would be attained within the Upper Sand aquifer, beyond the boundaries of the cap system, under Alternatives 2, 4a and 4b. These alternatives would require permanent restrictions on the use of ground water within the containment system in order to prevent unacceptable exposure risks.

Alternatives 3a, 3b, 3c and 5 would provide the greatest degree of long-term effectiveness and permanence through the active treatment of the source material in the Eastern Excavation Area at the Site and the enhancement or preservation of conditions which would allow continuing biodegradation of ground water contaminants. Although Alternatives 4a and 4b also would treat source material in order to permanently remove contaminants from the Site, these alternatives represent somewhat less permanent solutions due to their reliance on engineering and institutional controls which would need to be maintained in perpetuity in order to assure adequate protection of human health and the environment. Under Alternative 2, the vast majority of impacted soil would be addressed through engineering and institutional controls, as opposed to treatment. Therefore, Alternative 2 ranks lower in long-term effectiveness and permanence than Alternatives 3a, 3b, 3c, 4a, 4b and 5, each of which treat a significant volume of contaminated soil.

Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment

This evaluation criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce the toxicity, mobility, or volume of the hazardous substances as their principal element. This preference is satisfied when treatment is used to reduce the principal threats at a site.

Alternative 2 would provide off-site treatment and/or disposal of the Direct Contact Principal Threat material (approximately 500 cubic yards of soil, sediment and waste material). This Alternative calls for containment of the more substantial Ground Water Principal Threat volume (approximately 30,000 cubic yards of soil and waste material) and, therefore, it would not achieve a significant reduction of toxicity, mobility or volume of hazardous substances in Site soils through treatment.

Alternatives 3a through 5 would each provide on-site treatment of an estimated 30,000 cubic yards of Ground Water Principal Threat material in addition to off-site treatment and/or disposal of the Direct Contact Principal Threat material. In addition, Alternative 5 would treat an estimated 310,000 cubic yards of Ground Water Low-level Threat material. Those alternatives which provide thermal treatment of contaminated soil and waste material (Alternatives 3a, 3c, 4a, 5 and, possibly, 3b and 4b) would include the off-site treatment and/or disposal of hazardous substances removed from the soil and waste materials in accordance with all local, state and federal requirements in effect at the time.[31] The *in situ* chemical oxidation of contaminated soil and waste material under Alternatives 3b, 3c and 4b would result in the on-site destruction of the contaminants of concern. Alternatives 4a and 4b include containment of the treated materials and, therefore, these alternatives provide a lower degree of toxicity reduction through treatment than Alternatives 3a, 3b, 3c and 5 which do not include a containment component. Alternatives

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[31]A portion of the treatment residuals may be destroyed on-site (e.g., using catalytic or thermal oxidation) if necessary in order to comply with State air regulations or if determined to be cost-effective.

3a, 3c, 4a and 5, which provide treatment by LTTD,[32] would meet the cumulative risk standards, presented in Table 2-11 of the *Focused Feasibility Study,* for the material treated via LTTD. Uncertainty exists regarding the ability of the *in-situ* treatment technologies (components of Alternatives 3b, 3c and 4b) to achieve treatment standards. During laboratory treatability studies, chemical oxidation of Site soils yielded only modest reductions in the concentrations of certain contaminants of concern. Those alternatives which involve *in situ* treatment of soil and waste would likely provide a lesser degree of risk and toxicity reduction than those alternatives which provide treatment through *ex situ* LTTD.

Each of Alternatives 2 through 5 provide for the continued collection of contaminated ground water and would reduce the toxicity and volume of contaminated ground water at the Site through treatment, although VOCs in ground water would ultimately be transferred to the ambient air.[33] Alternatives 3a through 3c and 5 would provide the greatest reduction of contaminant mass at the Site through the collection and treatment of ground water because, in contrast to the containment alternatives, these alternatives would allow continued flushing of residual contaminants from soil into ground water and would allow, or enhance, naturally occurring contaminant biodegradation processes at the Site.

Alternative 5 would treat more contaminated soil than the other alternatives, as well as the ground water recovered from the Upper Sand aquifer. Therefore, this alternative provides the greatest reduction in toxicity, mobility and volume of contaminants. Alternatives 3a through 3c would each treat a substantial amount of contaminated soil and ground water, and would each provide approximately the same level of reduction in the toxicity, mobility and volume of contaminants. Alternatives 4a and 4b would treat approximately the same volume of soil that would be treated under Alternatives 3a through 3c. However, one effect of the containment measures which are a component of Alternatives 4a and 4b would be to reduce the volume of contaminated ground water that would be collected and treated, as compared with the alternatives which do not include containment. Alternative 2 would not achieve a significant reduction of toxicity, mobility or volume of hazardous substances in Site soils through treatment, and would also reduce the volume of contaminated ground water that would be collected and treated, as compared with the alternatives which do not include containment.

Short-term Effectiveness

This evaluation criterion addresses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. It considers risk to the

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[32] Alternatives 3a, 3c and 5 include a provision for High Temperature Thermal Desorption to treat a portion of the material, if necessary in order to meet treatment objectives.

[33]Emissions from the air stripper would comply with State regulations governing air quality and would not result in any unacceptable risks to off-site residents or potential future on-site residents.

community and on-site workers and available mitigation measures, as well as the time frame for the attainment of the response objectives.

The short-term risks associated with the implementation of Alternative 2 are minimal because of the limited scope of excavation activities. Alternatives 3a, 3c, 4a and 5 involve the excavation and on-site treatment of a substantial volume of contaminated soil and waste material and thus present potential short-term exposure risks to on-site workers and the local community. Air monitoring would be conducted and, if necessary, engineering controls would be implemented in order to mitigate risks and comply with State regulations governing emissions of toxic air pollutants. Excavation activities would be conducted within a temporary enclosure if necessary in order to comply with State air quality regulations. Work within an enclosure would increase the physical hazards to on-site workers. The short-term risk to on-site workers and the local community associated with Alternatives 3b and 4b would depend on the *in situ* treatment technology employed. *In situ* chemical oxidation would be expected to present minimal and controllable short-term exposure risks. The oxidation process would destroy contaminants in place and minimize volatilization of the contaminants of concern. The *in situ* thermal processes would result in the volatilization and recovery of contaminants. Air quality monitoring would be conducted and, if necessary, additional emission controls would be implemented in order to comply with State air quality regulations. Alternatives 2 through 5 also entail emissions of VOCs from the air stripper to ambient air. The potential emissions from the air stripper were evaluated during the design of the ground water treatment plant and were determined to comply with State air quality regulations. In addition, the OU3 *Baseline Risk Assessment* indicates that there are no unacceptable risks associated with exposure to emissions from the air stripper.

Alternative 2 would provide an immediate reduction in direct contact risk through the off-site treatment and/or disposal of the Direct Contact Principal Threat material, the containment of the Direct Contact Low-level Threat material and the institution of land use restrictions in order to prevent unacceptable exposure risks. The excavation and off-site disposal of material and the installation of a cap and barrier wall could be accomplished within a 7 to 10 month construction period. However, the ability of Alternative 2 to reliably control the migration of contaminants from the Ground Water Principal Threat material into ground water is uncertain. Alternatives 3a through 5 would provide short-term benefits (mitigation of direct contact risk and reduction in the migration of contaminants from soil and waste materials to ground water) through treatment of the Ground Water Principal Threat material. Alternatives 4a and 4b would be expected to achieve cleanup standards for ground water within a relatively short time frame. However, the ground water cleanup standards would be achieved outside the containment zone, only. Under Alternatives 3a, 3b and 3c, additional time would be required in order to achieve ground water cleanup standards through the enhancement of natural biodegradation processes. However, the ground water cleanup standards would ultimately be achieved throughout the Upper Sand aquifer. The excavation and treatment of contaminated materials and the backfilling of treated materials under Alternative 3a could be accomplished within a 10 to 12 month construction period. The installation of a cap and barrier wall, as provided by Alternative 4a, would add 4 to 6 months to the construction phase of the project. Alternative 5 would provide treatment of the

Ground Water Low-level Threat material, in addition to the Ground Water Principal Threat material, which would provide an additional immediate reduction in the migration of contaminants into ground water. Alternative 5 targets a large volume of material for treatment and, therefore, 2 to 3 years would be required in order to excavate, treat and backfill affected materials.

The implementation risks associated with Alternative 2 are expected to be smaller than the implementation risks associated with Alternatives 3a through 5. However, it is expected that the implementation of any of these alternatives would result in acceptable short-term risks.

Implementability

The evaluation of alternatives under this criterion considers the technical and administrative feasibility of implementing an alternative and the availability of services and materials required during implementation.

Construction of the subsurface barrier wall and cap, and extension of the ground water collection trench would be easily accomplished using conventional methods and materials for each of Alternatives 2 through 5. Alternatives 3a through 5 would be more difficult to implement than Alternative 2. These alternatives involve on-site treatment of soil and waste material, which would require additional controls in order to minimize VOC exposure to on-site workers and the local community. Alternatives 3a and 4a would be slightly more difficult to implement than Alternatives 3b and 3c due to the need to use shoring and dewatering. Shoring and dewatering are also components of Alternative 5. Alternative 5 would present the greatest implementation difficulties due to the need to excavate all of the Ground Water Low-level Threat material above and below the water table. Uncertainty exists regarding the ability of the *in situ* treatment technologies (components of Alternatives 3b, 3c and 4b) to achieve treatment standards and the alternatives which include these technologies would require treatability studies and pilot studies before they could be considered for full-scale application at the Site.

The remaining components of Alternatives 2 through 5 would not present any major implementation difficulties. Ground water monitoring would be performed using common practices. Mechanisms exist within the State and County governments to institute and enforce ground water use restrictions. Future use of the Site could be effectively controlled through the use of an easement because the owner of the land is subject to regulation under CERCLA.

Cost

The comparison of costs among the alternatives is straightforward. Among the remedial alternatives which meet the threshold criteria, Alternative 2 is significantly less costly than the other alternatives. Alternative 2 relies on containment as the primary means for reducing risk and does not use treatment to address principal threats wherever practicable. Alternatives 3a through 3c each entail the on-site treatment of Ground Water Principal Threat material and the present worth costs for these alternatives are comparable. Alternatives 4a and 4b include the

installation of a cap and barrier wall, in addition to the on-site treatment of the Ground Water Principal Threat material and, therefore, these alternatives are somewhat more costly than Alternatives 3a, 3b, and 3c. Alternative 5 provides for excavation and on-site treatment of approximately ten times the volume of soil and waste material that would be treated under Alternatives 3a through 4b. Alternative 5 is substantially more costly than the other remedial alternatives. However, it does not offer any significant advantages in risk reduction over Alternatives 3a through 4b. The capital costs for Alternatives 3a, 3c, 4a and 5 might be affected by whether or not compliance with RCRA Subpart O is required, which depends upon whether thermal destruction of hazardous waste occurs. Based on the available information, EPA does not believe that the cost of compliance with this requirement would exceed the amount factored into the cost estimates for these alternatives for contingencies. EPA also estimates that the costs for Alternatives 2 through 5 would be increased by approximately $250,000 to $1,000,000 over the estimates provided in the *Focused Feasibility Study* because of the cost of additional sampling necessary to ensure that the all soil that contains contaminants at concentrations which exceed action levels is addressed and in order to confirm the extent of the NAPL identified during the OU3 RI/FS.

State Acceptance

The State has not concurred with the selected remedy because of concerns unrelated to OU3 which it seeks to have resolved. MDE stated, specifically, that "the Department cannot provide its concurrence of the recommended actions until issues which may be more appropriately addressed under the OU-2 ROD are addressed." Because EPA believes that Alternative 3a is the best response action for OU3 at the Site, the Agency has decided to issue this ROD without waiting for issues pertaining to OU2 to be resolved.

Community Acceptance

The local community has expressed support for the selected remedy and at least one member of the local community expressed the opinion that the Site should be remediated in order to allow unrestricted future use of the Property.

Numerous citizens of the local community expressed concern about whether the ground water in the immediate vicinity of the Site was adequately monitored under OU2 and whether the OU2 remedy being implemented is sufficient to address the existing contamination. At EPA's request, the PRPs submitted an updated ground water monitoring plan to EPA for approval. Additionally, the Cecil County Health Department has tested water samples from approximately 50 water supply wells in the vicinity of the Site, and is planning to re-sample those with test results that showed the presence of chloroform. If a Site-related contaminant is confirmed in any water supply wells at a concentration which exceeds the action level specified in the OU2 ROD, point-of-use treatment or an alternate water supply will be provided in accordance with the OU2 ROD.

The PRPs performing response actions at the Site stated their preference for Alternative 2 as a more cost-effective remedy for OU3. Comments received during the public comment period concerning documents in the Administrative Record and the various alternatives are summarized in the Responsiveness Summary which is a part of this ROD.

11.0 SELECTED REMEDY

Following review and consideration of the information in the Administrative Record, the requirements of CERCLA and the NCP, and public comment, EPA has selected Alternative 3a *(Ex Situ* Treatment, by low temperature thermal desorption ("LTTD," see footnote 6), of Ground Water Principal Threat Material, Enhanced Biodegradation of Contaminants in Shallow Ground Water, and Expansion and Continued Operation of the Ground Water Recovery and Treatment System) as the remedy for OU3 at the Maryland Sand, Gravel and Stone Site.

11.1 Summary of the Rationale for the Selected Remedy

Alternative 3a will provide permanent and substantial risk reduction through the treatment of source materials which constitute principal threats and will allow the Site to be used for residential development which is the reasonably anticipated future land use for the Site. Because area homes and businesses are served by private water supply wells, and in light of development pressure in the vicinity of the Site evidenced by a recently proposed 148-unit residential subdivision northwest of the Site along Marley Road, EPA believes that an alternative that permanently addresses the principal source of ground water contamination at the Site is appropriate.

Ex situ LTTD is a proven technology which is capable of achieving the treatment standards necessary in order to meet the remedial action objectives for OU3 at the Site. The enhancement of the contaminant biodegradation processes which are naturally occurring in the ground water will result in the removal of additional contaminants from the Site and will ultimately lead to the attainment of the ground water cleanup standards throughout the Upper Sand aquifer. Alternative 3a will mitigate releases of hazardous substances to ground water, prevent exposure to contaminated ground water and restore ground water to its beneficial uses.

Based on the information available at this time, EPA has determined that, among those remedial alternatives that are protective of human health and the environment and comply with ARARs, the selected remedy provides the best balance of tradeoffs among the balancing criteria (long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) while considering State and community acceptance. Because Alternative 3a will treat source materials which constitute principal threats, EPA's selection of this alternative also meets the statutory preference for the selection of a remedy that involves treatment as a principal element.

11.2 Description of the Selected Remedy and Performance Standards

The selected alternative includes excavation, and on-site treatment by thermal desorption of the Ground Water Principal Threat material, Direct Contact Principal Threat material, and Direct Contact Low-level Threat material, comprising approximately 30,000 cubic yards of soil and waste. Approximately 1,000 cubic yards of material which would not be effectively treated on-site because of the properties of the contaminants or the soil matrix, including the Pond 2 Wet sediments which were identified as a potential threat to ecological receptors, will be treated and/or disposed of off-site. In addition, any NAPL identified during the design or implementation of this alternative will be recovered, to the extent practicable, for off-site treatment and/or disposal. The excavated areas will be backfilled with treated soil, and the disturbed areas will be covered with clean soil and revegetated. The existing shallow ground water interceptor trench system will be expanded by connecting existing trenches 1 and 2. Inorganic nutrients, organic carbon, electron receptors and/or microbial cultures will be added to the saturated zone of the Upper Sand aquifer in order to enhance the contaminant biodegradation processes which are occurring naturally at the Site.[34] Shallow ground water will continue to be collected and treated until the ground water cleanup levels are attained throughout the Upper Sand aquifer.[35] Temporary institutional controls will be implemented in order to ensure the effectiveness of the remedial action. More specifically, the selected remedy includes:

1. Pre-design studies to evaluate procedures to promote the natural biodegradation processes occurring in the ground water plume;

2. Pre-remediation sampling and analysis to further delineate the soil, sediment and waste material with contaminant concentrations that exceed the action levels, including screening or sampling to identify NAPL;

3. Excavation of an estimated 30,000 cubic yards of soil, sediment and solid waste material with contaminant concentrations exceeding the action levels and removal of any identified NAPL;

4. On-site treatment of soil, sediment and waste material using LTTD, and treatment of off-gases using particulate and vapor emission control systems (e.g., wet scrubber, fabric filter, condenser, activated carbon, catalytic or thermal oxidizer);

5a. Off-site disposal of a limited volume (approximately 1,000 cubic yards) of "special

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[34]Additional studies will be conducted during remedial design in order to optimize the performance potential of the biodegradation component of Alternative 3a.

[35]This ROD addresses the ground water of the Upper Sand aquifer. The OU2 ROD specifies the performance standards for remediation of the Middle Sand and underlying aquifers.

material"[36] that may not be effectively treated on-site;

5b. Collection and off-site disposal of any NAPL identified during remedial design or the excavation and dewatering of soil;

6. Backfilling of the excavations with treated soil;

7. Placement of 2 feet of clean soil and establishment of a stable, vegetated cover over the backfilled areas;

8. Expansion of the interceptor trenches to connect existing trenches 1 and 2;

9. Enhanced biodegradation of contaminants in the ground water in the saturated portion of the Upper Sand aquifer where the ground water concentrations exceed cleanup levels;

10. Continued operation of the ground water recovery and treatment system until the ground water cleanup levels are achieved;

11. Continued ground water monitoring until the ground water cleanup levels are achieved;

12. Monitoring of surface water and sediment quality in the western unnamed tributary to Mill Creek; and

13. Temporary land and ground water use restrictions on-site until the ground water cleanup levels are achieved.

The selected remedy and mandatory performance standards are described in detail below.

11.2.1 Evaluation of Procedures to Accelerate Natural Biodegradation Processes

Pre-design studies shall be conducted in order to evaluate approaches to accelerating the natural biodegradation of ground water contaminants that has been observed at the Site. Procedures for accelerating the bioremediation of ground water contaminants shall be developed in bench-scale microcosm studies that shall evaluate both aerobic and anaerobic pathways.

11.2.2 Pre-remediation Sampling and Analysis

Sampling and analysis shall be performed during the remedial design phase in order to ensure that all of the Ground Water Principal Threat material, Direct Contact Principal Threat material,

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[36]"Special material" is material (e.g., sediment in the Pond 2 Wet area) that contains contaminants such as pesticides, PCBs and metals which would not be effectively treated on-site by thermal desorption.

Ground Water Low-level Threat material and Direct Contact Low-level Threat material, as defined in section 7.1.7 of this ROD, is identified. Field screening techniques and/or sample collection and analysis shall also be employed to identify and delineate the areas where NAPL is present on-site. Data quality objectives shall be developed for this effort and a sampling and analysis plan shall be prepared in accordance with EPA's *Guidance for the Data Quality Objectives Process*, EPA QA/G-4 (September 2000) and any other relevant guidance, and submitted to EPA and the State for approval by EPA.

11.2.3 Excavation of Soil, Sediment and Waste and Removal of NAPL

All of the soil, sediment and solid waste material that would present an unacceptable direct contact risk and which represents a principal threat to ground water shall be excavated for subsequent on-site treatment or off-site treatment and/or disposal. Based on the preliminary action levels (Table 25) for Ground Water Principal Threat material and Direct Contact Low-level Threat material, an estimated 30,000 cubic yards of soil, sediment and waste material shall be excavated from the Site. This includes material in the Northern Depression Area to an estimated depth of 40 feet below ground surface, Pond 2 to an estimated depth of 25 feet, Pond 3 to an estimated depth of 3 feet, and the Buried Waste Area to an estimated depth of 25 feet. To facilitate excavation below the water table, it is assumed that extensive sheeting and shoring will be required. Water will be removed from the excavation and directed to the existing ground water treatment plant. If NAPL is identified on-site, it shall be recovered and staged on-site prior to transport off-site for treatment and/or disposal.

Debris and rocks larger than one-inch in size may interfere with the efficiency and mechanical operation of the LTTD unit. Therefore, the feed soil shall be screened and processed to reduce particle size to acceptable limits. Any volume of processed soil exceeding the LTTD feed capacity shall be diverted to a stockpile for subsequent treatment. Large boulders that cannot be easily handled by a backhoe shall be segregated and stockpiled at the active excavation area. Smaller boulders and cobbles, including naturally-occurring iron concretions, shall be removed from the soil stockpile prior to LTTD treatment of the soil. This material shall be subjected to a high pressure steam wash. The wash water shall be collected and treated at the on-site ground water treatment plant.

Air monitoring shall be conducted during excavation and soil processing activities. Remediation activities will be temporarily shut down, and additional emission controls (e.g., an enclosure to control emissions from earth moving activities) shall be put in place if necessary in order to comply with State regulations governing air quality.

Post-excavation soil sampling shall be conducted in accordance with EPA's *Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media*, February 1989, and any other relevant guidance, in order to ensure that all of the material that exceeds the action levels is addressed. The preliminary action levels given in Table 25 for individual contaminants may not result in the identification of all of the principal threat and low-level threat

material if multiple contaminants are present. Therefore, if contaminant concentrations are below the preliminary action levels, cumulative risks shall be evaluated in order to determine whether materials represent a principal threat or a low-level threat.

Performance Standards for Excavation of Soil, Sediment and Waste and Removal of NAPL

1. All soil, sediment and waste material containing contaminants at concentrations which exceed the action levels specified in section 7.1.7 of this ROD shall be excavated from the Eastern Excavation Area of the Site.

2. Excavation activities shall be conducted in compliance with the substantive requirements of Maryland regulations for the control of noise pollution (COMAR 26.02.03.01 and COMAR 26.02.03.03A, B(2), D(2) and (3)), storm water management (COMAR 26.17.02.02, COMARs 26.17.02.05A and B, COMARs 26.17.02.06A(3), A(4) and B, COMAR 26.17.02.08, COMAR 26.17.02.09B, and 40 CFR 122.26(b)(14) and (15)), and erosion and sediment control (COMAR 26.17.01.01, COMARs 26.17.01.05A and B, COMAR 26.17.01.07B, and COMARs 26.17.01.08A and B).

3. In preparation for treatment, excavated soil, sediment and waste material shall be staged and managed on-site in accordance with standards applicable to generators of hazardous waste (COMARs 26.13.03.01B(1) and (6), COMAR 26.13.03.02B, COMAR 26.13.03.05E and 40 CFR 262.11) and standards applicable to treatment, storage and disposal facilities (COMAR 26.13.05.01A(2), COMAR 26.13.05.09, COMAR 26.13.05.10-1, COMAR 26.13.05.10-3, COMARs 26.13.05.10-4A(1), B, C and D, COMAR 26.13.05.10-6A(1)-(5),(7) and (8), COMAR 26.13.05.10-7A, COMAR 26.13.05.11 [except COMAR 26.13.05.11G(1)(e)], COMAR 26.13.05.12, 40 CFR 264.10-19, 40 CFR 264.30-37, 40 CFR 264.50-56, 40 CFR 264.170-179, 40 CFR 264.190-200, 40 CFR 264.220-223, 40 CFR 264.226-230, 40 CFR 264.250-254, 40 CFR 264.256-259 and 40 CFR 264.1080-1088). Soil and sediment containing PCBs shall be managed on-site in accordance with the prohibitions of, and requirements for disposal, storage, and marking of PCBs and PCB Items (40 CFR Part 761).

4. Ground water generated from the dewatering process shall be treated on-site in the existing ground water treatment plant in order to meet the performance standards for ground water treatment specified in section 11.2.10 of this ROD.

5. NAPL collected during excavation and dewatering shall be managed on-site in compliance with standards applicable to generators of hazardous waste (COMARs 26.13.03.01B(1) and (6), COMAR 26.13.03.02B, COMAR 26.13.03.05E and 40 CFR 262.11) and standards applicable to treatment, storage and disposal facilities (COMAR 26.13.05.01A(2), COMAR 26.13.05.09, COMAR 26.13.05.10-1, COMAR 26.13.05.10-3, COMARs 26.13.05.10-4A(1), B, C and D, COMARs 26.13.05.10-6A(1) - (5), (7) and (8), COMAR 26.13.05.10-7A, COMAR 26.13.05.11 [except COMAR

26.13.05.11G(1)(e)], COMAR 26.13.05.12, 40 CFR 264.10-19, 40 CFR 264.30-37, 40 CFR 264.50-56, 40 CFR 264.170-179, 40 CFR 264.190-200, 40 CFR 264.220-223, 40 CFR 264.226-230, 40 CFR 264.250-254, 40 CFR 264.256-259 and 40 CFR 264.1080-1088).

6. Air emissions during excavation activities shall comply with the substantive requirements of Maryland emission standards (COMARs 26.11.06.01, .02, .03, .06, .08 and .09) and Maryland regulations governing toxic air pollutants (COMARs 26.11.15.01, .03, .04A and C, .05, .06 and .07 and COMARs 26.11.16.02A and B, .03, .05, .06 and .09).

7. All excavation activities that will affect wetlands, floodplains, or waters of the United States shall be conducted in accordance with the substantive requirements of federal and State regulations governing activities affecting wetlands (40 CFR 6.302(a), 40 CFR Part 6, Appendix A, COMARs 26.23.01.01, .02, and .04, COMARs 26.23.02.04 and .06, and COMARs 26.23.04.02 and .03) and the Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Policy Act (40 CFR 1500.2(f)).

11.2.4 On-site Treatment of Soil, Sediment and Waste Using LTTD and Treatment of Off-gases

Excavated soil, sediment and waste material shall be treated on-site using a mobile LTTD unit. The LTTD unit and associated emission control equipment and support facilities shall be transported to and assembled on-site. The process feed soil shall be treated on-site using LTTD in order to reduce the concentrations of the chemicals of concern to the applicable risk-based or regulatory levels (see performance standard number 1, below). It is estimated that following LTTD treatment, approximately 2,600 cubic yards of material may not meet treatment criteria due solely to the presence of bis(2-ethylhexyl)phthalate[37]. This material would be segregated and staged for either on-site treatment at higher temperatures using high temperature thermal desorption (HTTD), placement below the water table to address direct contact concerns, or transportation off-site for treatment and/or disposal. The equipment to be used for thermal desorption and operating conditions shall be determined during the remedial design.

Off-gases from the LTTD (or HTTD) unit shall be treated to remove particulate and vapor emissions. The means by which the emissions will be treated (e.g., wet scrubber, fabric filter, condenser, activated carbon, catalytic or thermal oxidizer) shall be determined during the remedial design. Emissions shall comply with Maryland emission standards and regulations governing toxic air pollutants selected in this ROD (see performance standard number 3, below). Desorbed contaminants that have been re-condensed and any other treatment residuals generated during soil treatment activities shall be treated and/or disposed of off-site in a RCRA hazardous

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[37]At this Site, bis(2-ethylhexyl)phthalate (BEHP) is a chemical of concern for direct contact with soil. BEHP is not a chemical of concern for ground water protection.

waste facility. Water generated during the treatment of off-gases shall be treated in the on-site ground water treatment plant.

The LTTD unit and associated equipment shall be dismantled and removed from the Site following soil remediation.

Performance Standards for On-site Treatment of Soil, Sediment and Waste Using LTTD and Treatment of Off-gases

1. Excavated soil, sediment and waste material shall be treated by thermal desorption to achieve cleanup levels that will:

   - reduce the excess lifetime cancer risk associated with current and potential future direct contact with soil to one in one million (1.0×10^{-6});[38]
   - reduce the HI for current and potential future direct contact with soil to1.0;
   - reduce the migration of contaminants from soils to ground water to levels that would not cause contaminant concentrations in the ground water of the Upper Sand aquifer to present a cumulative excess lifetime cancer risk greater than one in ten thousand (1.0×10^{-4}), result in a HI greater than 1.0, or exceed MCLs or non-zero MCLGs pursuant to the Safe Drinking Water Act; and
   - comply with ARARs for the treatment of hazardous waste.

   Post-treatment soil sampling shall be conducted in accordance with EPA's *Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media*, February 1989, and any other relevant guidance, in order to evaluate the attainment of the cleanup levels. Treated soil, sediment and waste material shall, at a minimum, meet the preliminary treatment standards given in Table 28. Because material which meets the preliminary treatment standards for individual contaminants may not meet the cumulative risk standards specified above if multiple contaminants are present, EPA's determination regarding the attainment of the treatment objectives will be based on an assessment of the cumulative residual risk following the achievement of the preliminary treatment standards. The cumulative risks associated with direct contact with the treated material, and the use of Upper Sand ground water which may be impacted by the treated material, shall be calculated. If necessary, the soil, sediment and waste material shall be further treated on-site in order to ensure that the final remediation levels meet the cumulative risk standards or, if the contaminants remaining in the treated material are not amenable to

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[38]It is unlikely that soils below the water table would be excavated during construction activities if the Site were developed for future use, including future residential use. Therefore, soils which will be placed below the water table following treatment will not be required to meet the 1.0×10^{-6} cancer risk standard for direct contact exposure. Soils which will be placed below the water table will be treated in order to reduce the excess lifetime cancer risk for direct contact with the soil to one in ten thousand (1.0×10^{-4}).

treatment on-site by thermal desorption, transported off-site for treatment and/or disposal.

2. The thermal desorption unit shall be operated in accordance with the substantive requirements of regulations for owners and operators of hazardous waste treatment, storage and disposal facilities that treat hazardous waste in miscellaneous units (COMARs 26.13.05.16-1A, B(1), B(2) [except that no permit shall be required and the cross-reference in B(2)(d) shall be limited to COMAR 26.13.05.16 and the substantive portions of 26.13.07.07], B(3) and the substantive portions of C), provided that the thermal destruction of hazardous waste does not occur. Otherwise, the thermal desorption unit shall be operated in accordance with the substantive requirements for thermal destruction of hazardous waste (COMARs 26.13.05.16A, B(1) and B(4), except that the cross-reference in B(4) to COMAR 26.13.07.17 shall be limited to the substantive portions of that regulation, and COMARs 26.13.05.16C - L, except the requirement to obtain a permit and other procedural requirements).

3. Air emissions from the thermal desorption unit shall comply with the substantive requirements of Maryland general emission standards (COMARs 26.11.06.01, .02, .03, .06, .08 and .09), Maryland regulations governing toxic air pollutants (COMARs 26.11.15.01, .03, .04A and C, .05, .06 and .07 and COMARs 26.11.16.02A and B, .03, .05, .06 and .09) and federal air emission standards for process vents (40 C.F.R. Part 264, Subpart AA) and equipment leaks (40 CFR Part 264, Subpart BB).

4. Water generated during the treatment of air emissions from the thermal desorption unit shall be treated on-site in the existing ground water treatment plant in order to meet the performance standards for ground water treatment specified in section 11.2.10 of this ROD.

5. Any other treatment residuals generated in the thermal desorption process, including the emission control process, (e.g., re-condensed organic contaminants, spent carbon), and any soil, sediment or waste material approved for off-site shipment by EPA, shall be treated and/or disposed of at an off-site RCRA hazardous waste facility and shall be managed on-site in compliance with standards applicable to generators of hazardous waste (COMARs 26.13.03.01B(1) and (6), COMAR 26.13.03.02B, COMAR 26.13.03.05E and 40 CFR 262.11) and standards applicable to treatment, storage and disposal facilities (COMAR 26.13.05.01A(2), COMAR 26.13.05.09, COMAR 26.13.05.10-1, COMAR 26.13.05.10-3, COMARs 26.13.05.10-4A(1), B, C and D, COMAR 26.13.05.10-6A(1)-(5),(7) and (8), COMAR 26.13.05.10-7A, COMAR 26.13.05.11 [except COMAR 26.13.05.11G(1)(e)], COMAR 26.13.05.12, 40 CFR 264.10-19, 40 CFR 264.30-37, 40 CFR 264.50-56, 40 CFR 264.170-179, 40 CFR 264.190-200, 40 CFR 264.220-223, 40 CFR 264.226-230, 40 CFR 264.250-254, 40 CFR 264.256-259 and 40 CFR 264.1080-1088). All federal, state and local regulations in effect at the time shall apply to the off-site disposal of this material. Currently, the federal land disposal restrictions contained in 40 CFR Part 268 apply to the off-site

disposal of waste, treatment residuals and contaminated media from the Site.

11.2.5 Off-site Disposal of "Special Material" and NAPL

It is expected that a limited volume (approximately 1,000 cubic yards) of "special material" (see footnote 36) may not be effectively treated on-site because of the properties of the contaminants or the soil matrix. This material, which is expected to include small quantities of material in the Northern Depression Area and the Pond 2 Wet sediments, shall be treated and/or disposed of off-site.

Any NAPL identified during remedial design or during excavation and dewatering of soil shall be treated and/or disposed of off-site.

Performance Standards for Off-site Disposal of "Special Material" and NAPL

"Special material" and any NAPL recovered at the Site shall be treated and/or disposed of off-site at a RCRA hazardous waste facility and shall be managed on-site in compliance with standards applicable to generators of hazardous waste (COMARs 26.13.03.01B(1) and (6), COMAR 26.13.03.02B, COMAR 26.13.03.05E and 40 CFR 262.11) and standards applicable to treatment, storage and disposal facilities (COMAR 26.13.05.01A(2), COMAR 26.13.05.09, COMAR 26.13.05.10-1, COMAR 26.13.05.10-3, COMARs 26.13.05.10-4A(1), B, C and D, COMAR 26.13.05.10-6A(1)-(5),(7) and (8), COMAR 26.13.05.10-7A, COMAR 26.13.05.11 [except COMAR 26.13.05.11G(1)(e)], COMAR 26.13.05.12, 40 CFR 264.10-19, 40 CFR 264.30-37, 40 CFR 264.50-56, 40 CFR 264.170-179, 40 CFR 264.190-200, 40 CFR 264.220-223, 40 CFR 264.226-230, 40 CFR 264.250-254, 40 CFR 264.256-259 and 40 CFR 264.1080-1088). Soil and sediment containing PCBs shall be managed on-site in accordance with the prohibitions of, and requirements for disposal, storage, and marking of PCBs and PCB Items (40 CFR Part 761). All federal, state and local regulations in effect at the time shall apply to the off-site disposal of this material. Currently, the federal land disposal restrictions contained in 40 CFR Part 268 apply to the off-site disposal of "special material" and NAPL from the Site.

11.2.6 Backfilling of Excavations with Treated Soil

Treated soil, sediment and waste material that meets the cleanup levels specified in section 11.2.4 of this ROD shall be backfilled into the excavated areas and graded.

Performance Standards for Backfilling of Excavations with Treated Soil

1. Backfilling activities shall be conducted in compliance with the substantive requirements of Maryland regulations for the control of noise pollution (COMAR 26.02.03.01 and COMARs 26.02.03.03A, B(2), and D(2) and (3)), storm water management (COMAR 26.17.02.02, COMARs 26.17.02.05A and B, COMARs 26.17.02.06A(3), A(4) and B, COMAR 26.17.02.08, COMAR 26.17.02.09B, and 40 CFR 122.26(b)(14) and (15)), and

erosion and sediment control (COMAR 26.17.01.01, COMARs 26.17.01.05A and B, COMAR 26.17.01.07B, and COMARs 26.17.01.08A and B).

2. All backfilling activities that will affect wetlands, floodplains, or waters of the United States shall be conducted in accordance with the substantive requirements of federal and State regulations governing activities affecting wetlands (40 CFR 6.302(a), 40 CFR Part 6, Appendix A, COMARs 26.23.01.01, .02, and .04, COMARs 26.23.02.04 and .06, and COMARs 26.23.04.02 and .03) and the Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Policy Act (40 CFR 1500.2(f)).

11.2.7 Placement of Clean Soil over Backfilled Areas and Establishment of a Vegetated Cover

Eighteen inches of clean fill and six inches of top soil shall be placed over the backfilled areas. A stable, vegetated cover shall be established over the backfilled areas and, as determined to be necessary by EPA, over other areas of the Site.

11.2.8 Expansion of Interceptor Trenches

The existing ground water interceptor trench shall be expanded by the addition of a trench segment, approximately 300 feet in length, to connect trenches 1 and 2. The trench spoils shall be treated on-site by thermal desorption.

Performance Standards for Expansion of Interceptor Trenches

1. The expanded trench shall intercept contaminated Upper Sand ground water between trenches 1 and 2 in order to prevent the uncontrolled migration of contaminated ground water beyond the existing trenches.

2. Any additional extraction wells installed within the ground water interceptor trench shall be constructed in accordance with the substantive requirements of Maryland regulations governing well construction (COMAR 26.04.04.02 and COMARs 26.04.04.07A, B, D through L, M(6) and O). Wells shall be installed by persons certified by the Board of Well Drillers pursuant to COMARs 26.05.01.01 and 26.05.01.02.

3. Trench spoils shall be treated on-site in order to meet the cleanup levels specified in section 11.2.4 of this ROD.

11.2.9 Enhanced Biodegradation of Contaminants in Ground Water

Amendments shall be added to the saturated portion of the Upper Sand aquifer on-site in order to accelerate the intrinsic biodegradation of ground water contaminants that has been observed at

the Site. Final degradation products of these processes include carbon dioxide, water, chloride ion, and ethane. The amendments (e.g., inorganic nutrients, organic carbon, electron receptors and/or microbial cultures) shall be added to stimulate or augment existing microbial populations so that they can more aggressively break down the chemicals of concern in ground water. The addition of substances to enhance biodegradation processes at the Site shall be conducted in a manner that will not result in the accumulation of toxic intermediate products of biodegradation within the Upper Sand aquifer.

Performance Standards for Enhanced Biodegradation of Contaminants in Ground Water

1. Studies shall be conducted in order to determine the amendments which would optimize the performance of the enhanced biodegradation of contaminants in the ground water of the Upper Sand aquifer at the Site.

2. The amendments shall be delivered to the Upper Sand aquifer in a manner that maintains sustained increases in the naturally occurring rates of biodegradation of the ground water contaminants throughout the contaminant plume, until the ground water cleanup levels are met.

3. The addition of substances to enhance biodegradation processes at the Site shall not result in the accumulation of toxic intermediate products of biodegradation (e.g., vinyl chloride) within the Upper Sand aquifer.

4. The addition of amendments into ground water shall comply with the requirements of the federal Underground Injection Control Program (40 CFR Part 144).

11.2.10 Continued Operation of the Ground Water Recovery and Treatment System

Ground water shall be recovered from the Upper Sand aquifer using the existing and expanded ground water interceptor trench system until the ground water cleanup levels are achieved throughout the aquifer.

Extracted ground water shall be treated on-site in the existing treatment plant, which consists of an air stripper to remove VOCs and pH adjustment. The treated ground water shall continue to be discharged to the western unnamed tributary to Mill Creek.

Performance Standards for Ground Water Recovery and Treatment

1. The recovery and treatment of the ground water in the Upper Sand aquifer will continue until MCLs (40 CFR §§ 141.11-.12 and 141.61-.62) and non-zero MCLGs (40 CFR §§ 141.50-.51) given in Table 28.a are attained and the excess cancer risk associated with potential residential use of the ground water is reduced to one in ten thousand (1.0×10^{-4}) and the HI is reduced to1.0. The points at which compliance with the cleanup levels will

be measured shall include all well locations included in the monitoring program discussed below.

2. The attainment of the ground water cleanup levels shall be evaluated in accordance with EPA's *Methods for Evaluating the Attainment of Cleanup Standards, Volume 2: Ground Water*, July 1992, and any other relevant guidance.

3. The on-site treatment system shall reduce contaminant concentrations in extracted ground water to levels that EPA, in consultation with MDE, has determined: (1) shall achieve compliance with State water quality standards (COMARs 26.08.02.02 and .03, COMARs 26.08.02.03-1A and B, COMARs 26.08.02.03-2A - I, COMAR 26.08.02.03-3B, COMAR 26.08.02.05 and COMAR 26.08.02.07) and federal ambient water quality criteria established for the protection of aquatic life pursuant to Section 304 of the Clean Water Act (33 U.S.C. § 1314); and (2) shall not result in an exceedance of MCLs (40 CFR §§ 141.11-.12 and 141.61-.62) and non-zero MCLGs (40 CFR §§ 141.50-.51) in the receiving body of water.

4. Discharge of treated ground water to the western unnamed tributary to Mill Creek shall comply with the substantive requirements of the National Pollutant Discharge Elimination System ("NPDES") program (33 U.S.C. § 1251 et seq., 40 CFR 122.1(b)(1), 40 CFR 122.2, 40 CFR 122.29, 40 CFR 122.41(a), (d), (e), (j)(1), (m)(1) and (m)(4), 40 CFR 122.44-45 CFR, 40 CFR 125.1-3, and 40 CFR 125.100-104) and Maryland discharge limitations and monitoring requirements (COMARs 26.08.03.01 and .07, COMARs 26.08.04.02-1A and D and COMAR 26.08.04.03A).

5. Emissions from the air stripper shall meet the substantive requirements of Maryland general emission standards (COMARs 26.11.06.01, .02, .03, .06, .08 and .09), Maryland regulations governing toxic air pollutants (COMARs 26.11.15.01, .03, .04A and C, .05, .06 and .07 and COMARs 26.11.16.02A and B, .03, .05, .06 and .09) and federal air emission standards for process vents (40 C.F.R. Part 264, Subpart AA). The EPA guidance document, *Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites* (OSWER Directive 9355.0-28, June 15, 1989), shall also be considered in determining the need for air emission controls.

11.2.11 Ground Water Monitoring

A ground water monitoring program shall be implemented during the remediation phase in order to evaluate the impact of soil remediation on ground water quality, the performance of the enhanced bioremediation, and the effectiveness of the ground water collection system. The location, frequency, and duration of sampling and the analytical parameters and methods to be used will be determined by EPA, in consultation with MDE, during the remedial design. Ground water monitoring shall continue until the cleanup levels are met throughout the ground water of the Upper Sand aquifer.

Performance Standards for Ground Water Monitoring

1. New monitoring wells shall be installed in accordance with substantive State requirements for well construction (COMARs 26.04.04.02 and .07A, B, D through L, M(6) and O). Wells shall be installed by persons certified by the Board of Well Drillers pursuant to COMARs 26.05.01.01 and 26.05.01.02.
2. Monitoring wells shall be located in the Upper Sand aquifer in sufficient numbers and locations to evaluate the impact of the soil remediation, the performance of enhanced bioremediation, and the effectiveness of the subsurface barrier wall/interceptor trench system.
3. Monitoring wells shall be abandoned in accordance with substantive State requirements for well abandonment (COMAR 26.04.04.11).

11.2.12 Stream Monitoring

A stream monitoring program shall be implemented in order to identify any changes in conditions in the western unnamed tributary to Mill Creek due to the discharge of treated ground water to the ponded wetland.

Surface water and sediment samples shall be collected from upstream and downstream locations in the western unnamed tributary to Mill Creek. The exact number and location of samples will be determined by EPA, in consultation with MDE, during the remedial design. These samples shall be analyzed for metals. In addition, surface water parameters such as temperature, dissolved oxygen, pH, conductivity and flow rate shall be measured at each sampling station. Surface water samples from each station shall also be analyzed for total suspended solids, alkalinity and hardness. Similarly, the temperature, oxidation-reduction potential (Eh), pH, conductivity and color (as determined by comparison with the Munsell Soil Color Charts) of sediments at each sample location shall be measured. Sediment samples from each sampling location shall also be analyzed for total organic carbon, grain size, percent moisture and percent solids. Biological monitoring of aquatic macroinvertebrates, in accordance with EPA's guidance document, *Rapid Bioassessment Protocol for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish* (EPA/444/4-89-001, May 1989), shall be conducted once a year until EPA determines that such testing is no longer required in order to protect the environment. In addition, the toxicity of sediment shall be evaluated annually using the 14-day acute toxicity screen with freshwater amphipods (Hyalella azteca), as directed by EPA, until EPA determines that such testing is no longer necessary in order to protect the environment.

EPA, in consultation with MDE, will determine the need for additional stream studies or further actions to address the quality of water in the western unnamed tributary based on the stream monitoring data, State water quality standards and federal ambient water quality criteria. EPA, in consultation with MDE, will determine the need for additional stream studies or further actions to address the quality of the sediments in the western unnamed tributary based on the

stream monitoring data and appropriate toxicity reverence values ("TRVs").

11.2.13 Temporary Land and Ground Water Use Restrictions

There are three use restrictions:

1. Temporary land use restriction(s) shall prohibit any activity which could interfere with the ground water pump and treat system until the ground water cleanup standards are met. The ground water pump and treat system is currently located in the Eastern Excavation Area. However, if the system is expanded, this restriction could include other areas in the vicinity of the Eastern Excavation Area.

2. As recommended by the State, temporary land use restriction(s) shall prohibit any activities that would interfere with the biodegradation and natural attenuation portions of the remedy, e.g., activities which reduce the influx of water in the Ground Water Low-level Threat area (see Figure 5). The Ground Water Low-level Threat area has been approximated in the *Focused Feasibility Study* using available sampling data. It shall be further delineated after the full-scale sampling to be required during remedial design to ensure that all areas within the definition of Ground Water Low-level Threat are included in the temporary land use restriction but that no additional land is unnecessarily restricted. Such land use restrictions shall remain in effect until the ground water cleanup standards are met. This temporary control has the added benefit of mitigating the risk of unacceptable exposures due to poor indoor air quality (e.g., in basements if homes were allowed to be built in the Eastern Excavation Area) resulting from contaminants present in Site soils and ground water.

3. Temporary institutional controls shall prevent the use of ground water for consumption and/or showering at the approximately 60-acre area within the fence that surrounds the Eastern Excavation Area. This control is necessary to protect people from unacceptable exposure until the ground water cleanup standards are met.

11.3 Summary of the Estimated Remedy Costs

The estimated present worth cost of the selected remedy is $23,514,000. This figure includes the costs presented in the detailed cost summary in Table 30 plus an additional $1 million to account for the costs of sampling and analysis to ensure that all of the material with contaminant levels exceeding the action levels is identified.

The information in this cost estimate summary table is based on the best available information regarding the anticipated scope of the response action. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Minor changes may be

documented in the form of a memorandum in the Administrative Record file. Changes which are significant, but not fundamental, may be documented in an Explanation of Significant Differences. Any fundamental changes will be documented in a ROD amendment.

11.4 Expected Outcomes of the Selected Remedy

This section presents the expected outcomes of the selected remedy in terms of resulting land and ground water uses and risk reduction achieved as a result of the response action.
Following the completion of soil remediation activities, which are expected to have a duration of approximately one year, trespassers on the Site will no longer be subject to unacceptable health risks from exposure to soil and sediment in the Eastern Excavation Area. Temporary institutional controls will restrict the use of ground water in the Eastern Excavation Area of the Site, and will also restrict activities which could interfere with the ground water pump and treat system or the biodegradation and natural attenuation portions of the remedy, until the ground water cleanup levels are met.

The treatment or removal of soil and other materials which represent a principal threat to ground water is expected to have an immediate and substantial impact on ground water quality in the Upper Sand and Middle Sand aquifers. The Site will be available for unrestricted use following the attainment of the ground water cleanup levels in the Upper Sand and underlying aquifers.

Following the attainment of the cleanup levels for soil and ground water, the level of risk remaining for exposure to soil and shallow ground water, assuming future residential use of the Site, will be as follows:

- The maximum excess lifetime cancer risk for exposure to on-site soil would be below 1.0×10^{-4} and it is expected that exposure to soil would result in no adverse non-cancer health effects. As described in section 8.0 of this ROD, the maximum excess lifetime cancer risk for exposure to treated soil will be 1.0×10^{-6} or less.

- Contaminant levels in the ground water of the Upper Sand aquifer will be below MCLs. Although residential use of the ground water in the Upper Sand unit is unlikely (wells would most likely be installed in the Middle Sand, Lower Sand or Bedrock aquifers), the excess lifetime cancer risk for such use would be below 1.0×10^{-4} and it is expected that residential use of the ground water would result in no adverse non-cancer health effects.

The cleanup standards for soil and ground water are presented in greater detail in section 8.0 (Remedial Action Objectives) of this ROD. Preliminary treatment standards for soil are given in Table 28. The actual treatment standards may be lower if multiple contaminants are present, in order to meet the risk-based cleanup standards.

12.0 STATUTORY DETERMINATIONS

Under CERCLA, selected remedies must protect human health and the environment, comply with ARARs, be cost-effective and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Additionally, CERCLA includes a preference for remedies that use treatment to significantly and permanently reduce the volume, toxicity or mobility of hazardous wastes, as their principal element. The following sections discuss how the selected soil and ground water remedy for OU3 at the Maryland Sand, Gravel and Stone Site meets these statutory requirements.

12.1 Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by reducing contaminant concentrations in soil in the Eastern Excavation Area and ground water at the Site, controlling exposure to contaminated ground water until the cleanup levels are achieved, and reducing contaminant loading to ground water.

The excavation and on-site treatment (or off-site treatment and/or disposal) of soil, sediment and waste material will reduce contaminant concentrations to levels where they will no longer present an unacceptable risk to human health and the environment through direct contact The excavation and treatment of contaminated soil, sediments and waste material and the removal of any identified NAPL in the subsurface will also substantially reduce further migration of contaminants to ground water in the Upper Sand and Middle Sand aquifers. Once the cleanup levels for soil and shallow ground water established in this ROD, and the cleanup levels for the ground water in the deeper aquifers established in the OU2 ROD, are achieved, the carcinogenic risk associated with exposure to soil and ground water is expected to be within EPA's target risk range of 1×10^{-6} to 1×10^{-4} and it is expected that there will be no significant potential for adverse non-cancer health effects as a result of exposure to Site media.

Soil sampling will ensure that any unacceptable levels of contamination in Site soil are addressed. Ground water monitoring will provide data for evaluating the effectiveness of the remedial action and will ensure that any unacceptable levels of contaminants in the Upper Sand ground water are addressed.

Ground water use restrictions will prevent future exposure to the ground water on-site until the ground water cleanup levels are achieved.

Air emissions from the existing air stripper are below regulatory levels and are expected to decline in the future as contaminant levels in ground water decline. Air emissions from the thermal desorption process will be reduced to acceptable regulatory levels through the use of emission controls. Treated ground water which is discharged to the western unnamed tributary will meet all appropriate water quality standards and NPDES limitations in order to prevent any adverse environmental effects.

Through treatment, institutional controls and monitoring, this remedy will be protective of human health and the environment during and upon completion of the remedial action.

12.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy will attain all remedy-specific applicable or relevant and appropriate requirements, which are included in Section 11.2 and Table 29 of this ROD.

12.3 Cost-Effectiveness

The selected remedy is cost-effective in that it eliminates or mitigates the risks posed by the contaminants at the Site, meets all requirements of CERCLA and the NCP, and its overall effectiveness in meeting the remedial action objectives is proportionate to its cost.

12.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable through the use of thermal desorption to remove contaminants of concern from soil, the promotion of biodegradation processes to remove, through destruction, contaminants from ground water, and the treatment of recovered ground water by air stripping to remove contaminants from ground water. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost while also considering the statutory preference for treatment as a principal element and State and community acceptance.

12.5 Preference for Treatment as a Principal Element

The selected remedy will treat the majority of the principal threat material present at the Site through on-site thermal desorption of soil, sediment and waste material. A relatively small volume of principal threat material which is not amenable to on-site treatment will be treated and/or disposed of off-site together with any NAPL identified during remedial activities.

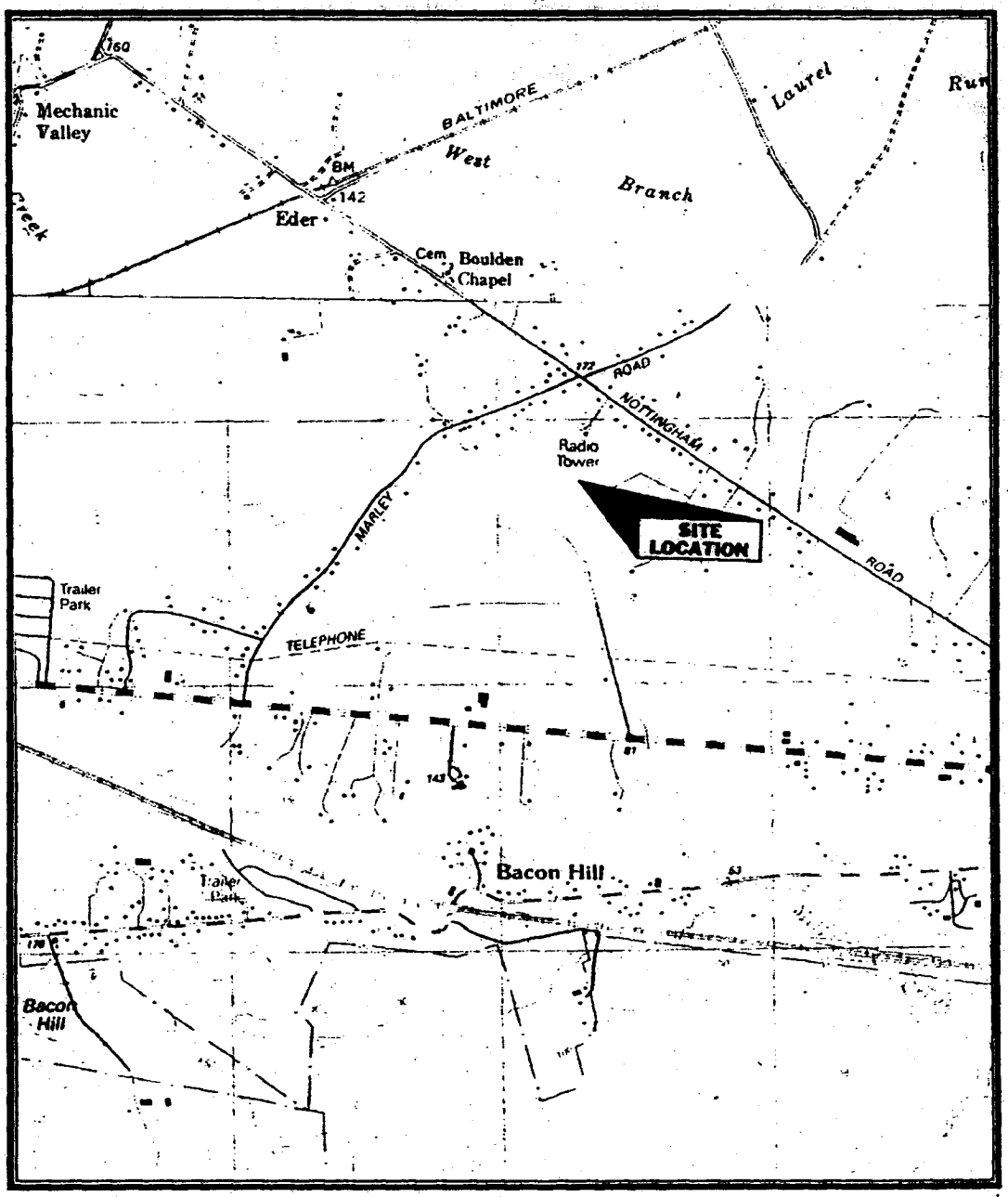
12.6 Five-Year Review Requirements

Because the remedy will result in hazardous substances remaining on-site above levels that will allow for unlimited use and unrestricted exposure, a review will be conducted at least every five years after initiation of the remedial action pursuant to CERCLA Section 121(c) and the NCP Part 300.430(f)(5)(iii)(C), until the ground water cleanup levels are met, in order to ensure that the remedy continues to provide adequate protection of human health and the environment.

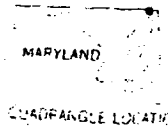
13.0 Documentation of Significant Changes

There have been no significant changes to the proposed remedy as a result of public comments. Based on these comments, EPA believes that the local public supports EPA's selected remedy for OU3 at the Site. Although MDE has withheld concurrence on the selected remedy because of concerns related to OU2 at the Site, the State has raised no objections to the components of the selected remedy for OU3.

Figure 1
Site Location Map
Maryland Sand, Gravel, & Stone
Elkton, Maryland



North East/Bay View Quadrangle
Maryland
7.5 Minute Series

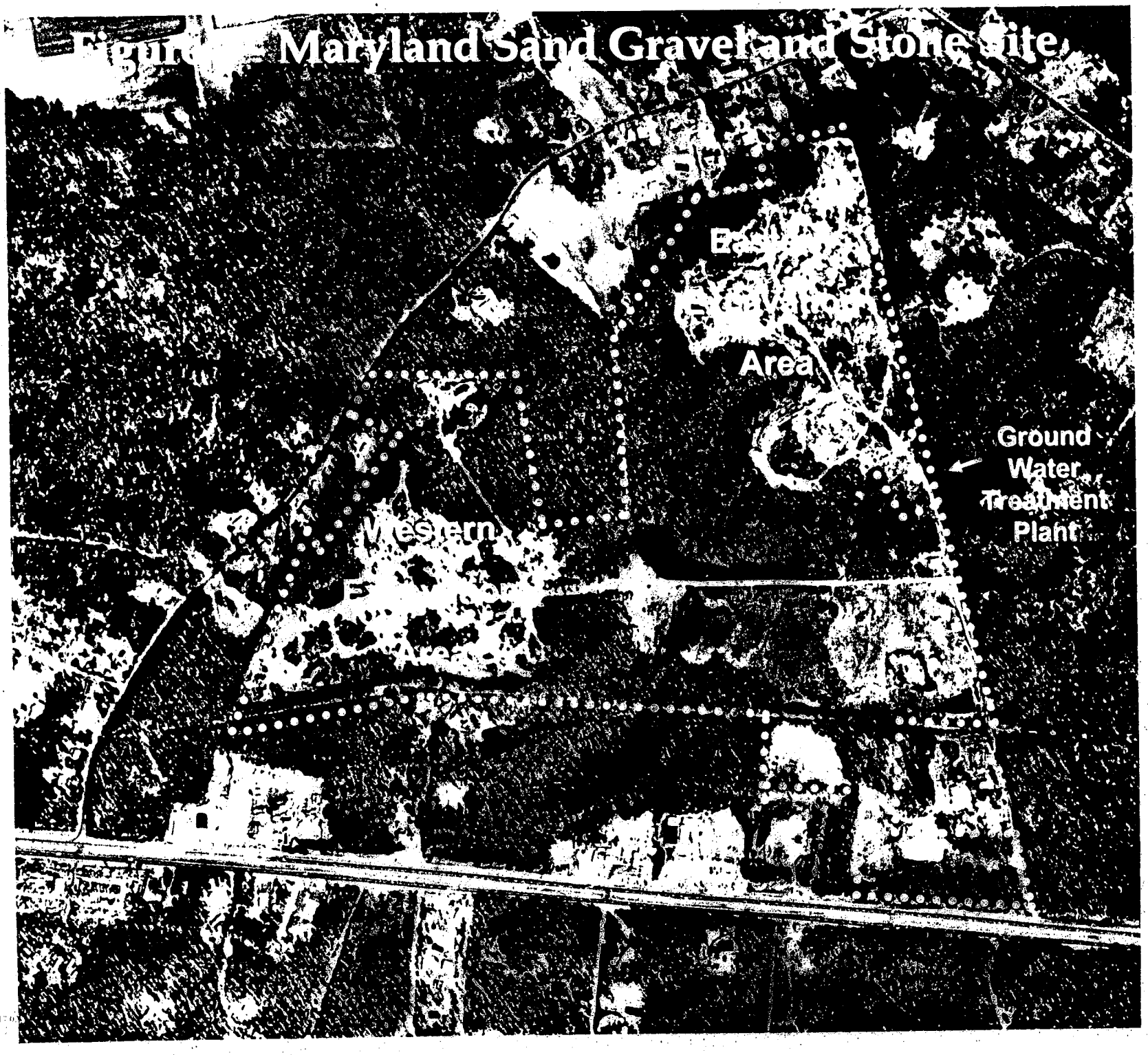


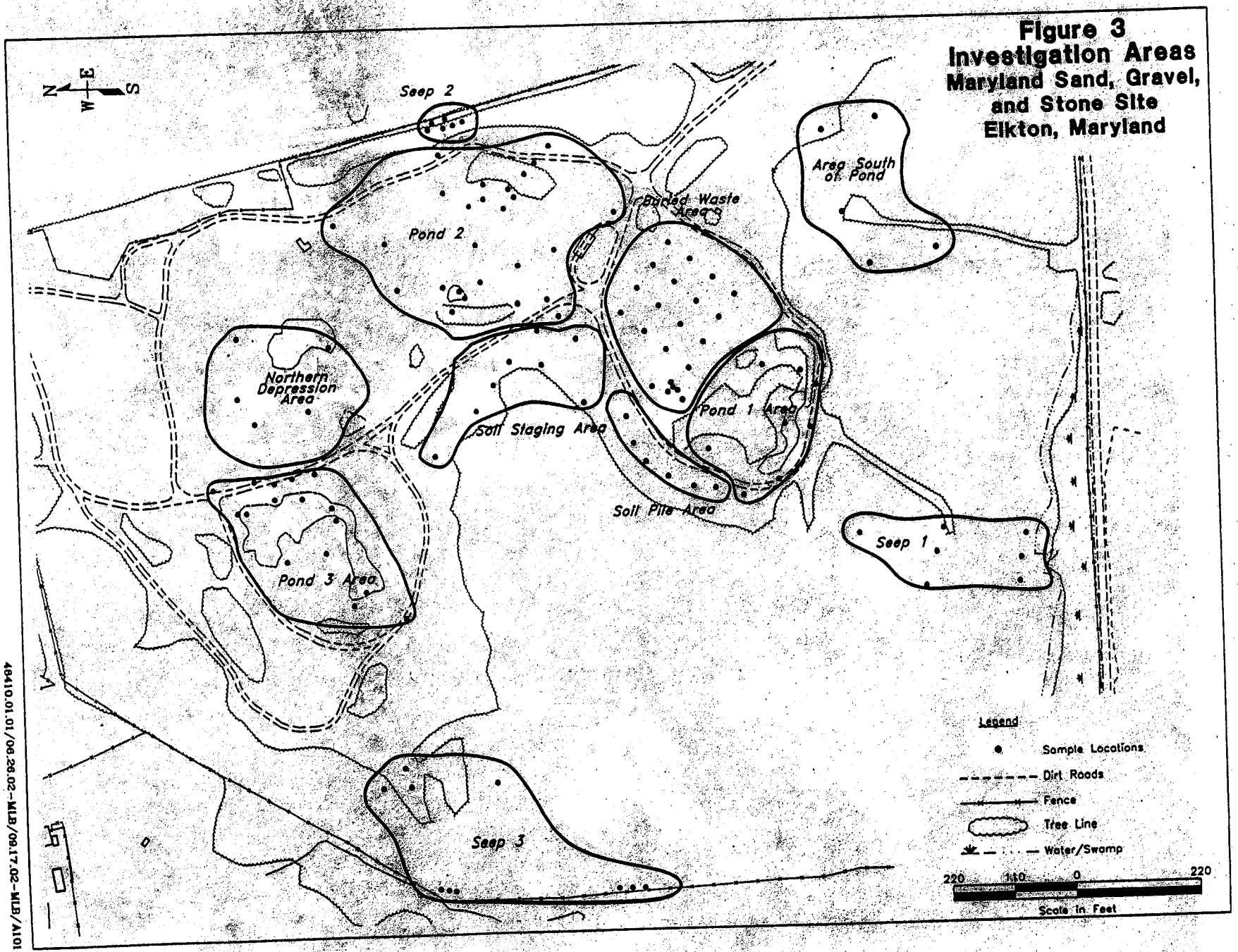
SCALE 1 : 24,000

1 .5 0 1 MILE

CONTOUR INTERVAL 20 FEET

ERM®


Maryland Sand Gravel and Stone Site
Area
Ground
Water
Treatment
Plant
Western



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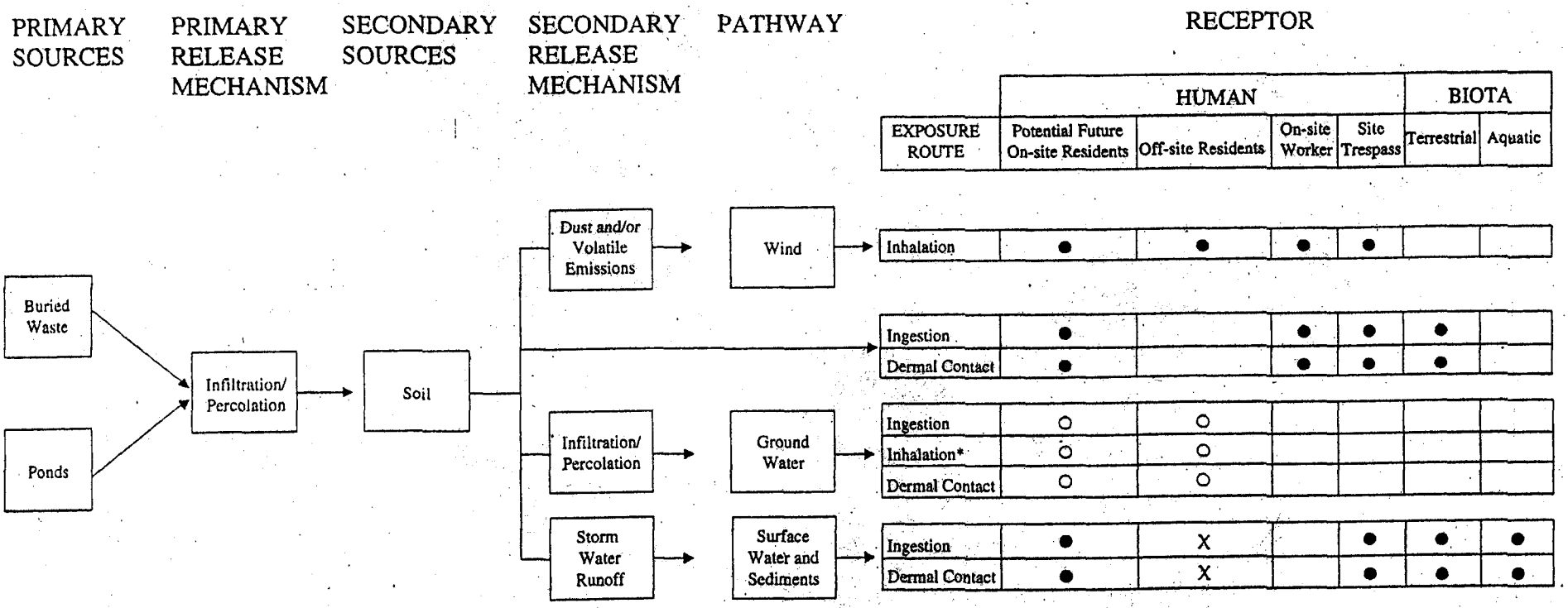
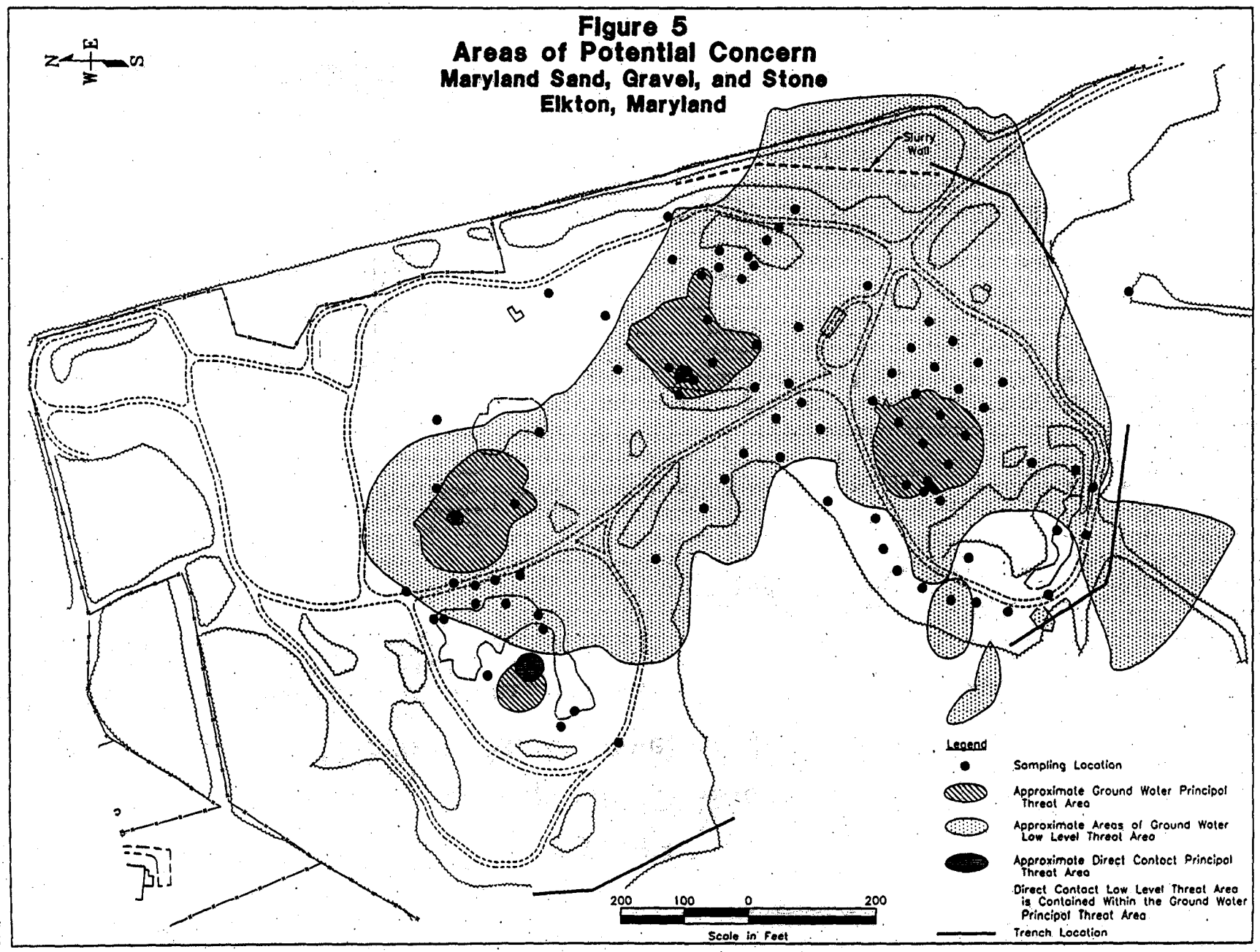
48410.01.01/06.26.02-MLB/09.17.02-MLB/A101

Figure 4
Conceptual Site Model
Maryland Sand, Gravel and Stone Site



● Exposure pathway evaluated in the OU3 risk assessment.
○ Exposure pathway evaluated in the OU1 or OU2 risk assessments.
X Pathway considered to be a negligible source of exposure for this receptor. Pathway not evaluated in the risk assessment.
* Includes exposure to emissions from groundwater treatment as evaluated in risk assessment.

Figure 5
Areas of Potential Concern
Maryland Sand, Gravel, and Stone
Elkton, Maryland



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48410.01.01/06.28.02-MLB/08.17.02-MLB/11.15

TABLE 1
Summary Statistics for Chemicals of Potential Concern in Surface Soil at the Pond 2 Hot Spot

Chemical	Detects	Samples	Maximum Concentration (mg/kg)
1,1,1-Trichloroethane	2	2	2,900
Benzene	2	2	130
Chlorobenzene	2	2	11,000
Dibromochloromethane	1	2	5,000
Tetrachloroethylene (PCE)	2	2	7,900
Toluene	2	2	24,000
Trichloroethylene (TCE)	2	2	3,000
1,4-Dichlorobenzene	2	2	700
4-Methylphenol (p-cresol)	2	2	100
Bis(2-chloroethyl)ether	1	2	6.4
Hexachlorobenzene	1	2	0.76
Aldrin	2	2	39
Aroclor 1242	2	2	40
Antimony	2	2	160
Barium	2	2	2,600
Cadmium	2	2	640
Chromium	2	2	3,700
Copper	2	2	710
Iron	2	2	21,000
Lead	2	2	34,000
Mercury	1	2	280
Selenium	1	2	130
Vanadium	2	2	2,000

TABLE 2
Summary Statistics for Chemicals of Potential Concern in Site-Wide[1] Surface Soil

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average	95% UCL	Maximum
Arsenic	13	18	2.13	2.84	3.30
Iron	7	7	12,946	17,171	24,000
Lead	17	18	8.21	14.33	65
Vanadium	7	7	154	184	200

Note:
1 - Concentrations are for the entire site excluding the Pond 2 hot spot

TABLE 3 Chemicals of Potential Concern (COPCs) in Air		
Benzene	1,1-Dichloroethylene	1,1,1-Trichloroethane[1]
Chlorobenzene	cis-1,2-Dichlorethylene	1,1,2-Trichloroethane
Chloroform	Tetrachloroethylene	Trichloroethylene
1,4-Dichlorobenzene	Toluene[1]	Vinyl chloride[1]
1,2-Dichloroethane		

Note:
1 - The identified chemicals were selected as COPCs for air stripper emissions only.

TABLE 4
Summary Statistics for Chemicals of Potential Concern
Sitewide

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	22	60	3,016	601	65,000
1,1-DICHLOROETHENE	12	66	14.5	40.5	79.6
4-METHYL-2-PENTANONE	23	57	8.81	242	95.0
ACETONE	2	5	2,335	N/A	4,400
BENZENE	28	60	91.3	139	2,300
CHLOROBENZENE	33	47	8,248	100,245	270,000
DIBROMOCHLOROMETHANE	0	59	ND	12.3	ND
ETHYLBENZENE	31	58	359	3,091	9,300
M,P-XYLENE	35	55	1,321	211,388	39,000
METHYLENE CHLORIDE	4	19	141	6,806	550
O-XYLENE	34	57	596	23,239	16,000
TETRACHLOROETHENE	44	72	2,915	39,337	110,000
TOLUENE	33	48	7,644	114,221	230,000
TRICHLOROETHENE	46	81	390	531	14,000
VINYL CHLORIDE	5	60	0.319	16.7	0.970
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	20	60	24.6	4.45	300
1,3-DICHLOROBENZENE	6	60	171	3.45	1,000
1,4-DICHLOROBENZENE	16	60	64.8	11.2	600
3,3'-DICHLOROBENZIDINE	2	60	1.21	2.34	2.40
4-METHYLPHENOL	13	60	1.66	1.91	20.0
BENZO(A)PYRENE	0	60	ND	1.39	ND
BENZO(B)FLUORANTHENE	0	60	ND	1.39	ND
BIS(2-CHLOROETHYL)ETHER	1	60	68.0	1.49	68.0
BIS(2-ETHYLHEXYL)PHTHALATE	10	22	28.3	58.6	200
DIBENZ(A,H)ANTHRACENE	0	60	ND	1.39	ND
HEXACHLOROBENZENE	0	60	ND	1.39	ND
NAPHTHALENE	11	50	5.49	2.58	15.0
NITROBENZENE	1	60	4.00	1.12	4.00
III. PESTICIDES/PCB					
ALDRIN	0	23	ND	219	ND
AROCLOR-1242	1	23	0.082	3.20	0.082
IV. METALS					
ANTIMONY	3	60	8.93	2.89	9.70
ARSENIC	6	60	7.23	5.79	22.0
BARIUM	59	60	120	156	350
CADMIUM	8	60	13.2	4.42	32.0
COPPER	13	60	19.0	13.1	84.0
IRON	60	60	10,937	12,678	25,000
LEAD	31	60	90.6	38.0	1,100
MANGANESE	38	60	56.5	55.6	110
MERCURY	0	60	ND	4.93	ND
NICKEL	9	60	110	51.4	250
SELENIUM	2	60	0.860	3.55	0.950
THALLIUM	3	60	42.7	11.9	52.0
VANADIUM	60	60	174	186	290

TABLE 5
Summary Statistics for Chemicals of Potential Concern
Area South of Pond 1

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	0	6	ND	N/A	ND
1,1-DICHLOROETHENE	0	6	ND	N/A	ND
4-METHYL-2-PENTANONE	0	6	ND	N/A	ND
ACETONE	0	0	ND	N/A	ND
BENZENE	0	6	ND	N/A	ND
CHLOROBENZENE	0	5	ND	N/A	ND
DIBROMOCHLOROMETHANE	0	6	ND	N/A	ND
ETHYLBENZENE	0	6	ND	N/A	ND
M,P-XYLENE	0	5	ND	N/A	ND
METHYLENE CHLORIDE	0	3	ND	N/A	ND
O-XYLENE	0	6	ND	N/A	ND
TETRACHLOROETHENE	0	5	ND	N/A	ND
TOLUENE	0	3	ND	N/A	ND
TRICHLOROETHENE	0	6	ND	N/A	ND
VINYL CHLORIDE	0	6	ND	N/A	ND
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	0	6	ND	N/A	ND
1,3-DICHLOROBENZENE	0	6	ND	N/A	ND
1,4-DICHLOROBENZENE	0	6	ND	N/A	ND
3,3'-DICHLOROBENZIDINE	0	6	ND	N/A	ND
4-METHYLPHENOL	0	6	ND	N/A	ND
BENZO(A)PYRENE	0	6	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	6	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	0	6	ND	N/A	ND
BIS(2-ETHYLHEXYL)PHTHALATE	0	1	ND	N/A	ND
DIBENZ(A,H)ANTHRACENE	0	6	ND	N/A	ND
HEXACHLOROBENZENE	0	6	ND	N/A	ND
NAPHTHALENE	1	6	0.046	N/A	0.046
NITROBENZENE	0	6	ND	N/A	ND
III. PESTICIDES/PCB					
ALDRIN	0	1	ND	N/A	ND
AROCLOR-1242	0	1	ND	N/A	ND
IV. METALS					
ANTIMONY	0	6	ND	N/A	ND
ARSENIC	2	6	18.5	N/A	22.0
BARIUM	6	6	214	N/A	350
CADMIUM	0	6	ND	N/A	ND
COPPER	3	6	21.0	N/A	22.0
IRON	6	6	16,283	N/A	25,000
LEAD	3	6	13.7	N/A	19.0
MANGANESE	6	6	71.5	N/A	92.0
MERCURY	0	6	ND	N/A	ND
NICKEL	0	6	ND	N/A	ND
SELENIUM	0	6	ND	N/A	ND
THALLIUM	0	6	ND	N/A	ND
VANADIUM	6	6	177	N/A	210

TABLE 6
Summary Statistics for Chemicals of Potential Concern
Buried Waste Area

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	2	4	551	N/A	1,100
1,1-DICHLOROETHENE	1	4	64.0	N/A	64.0
4-METHYL-2-PENTANONE	2	4	54.5	N/A	95.0
ACETONE	0	1	ND	N/A	ND
BENZENE	2	4	20.4	N/A	34.0
CHLOROBENZENE	3	3	246	N/A	670
DIBROMOCHLOROMETHANE	0	4	ND	N/A	ND
ETHYLBENZENE	3	4	19.2	N/A	53.0
M,P-XYLENE	3	3	77.8	N/A	220
METHYLENE CHLORIDE	0	1	ND	N/A	ND
O-XYLENE	3	3	34.1	N/A	95.0
TETRACHLOROETHENE	3	4	122	N/A	350
TOLUENE	3	3	295	N/A	830
TRICHLOROETHENE	3	4	78.3	N/A	200
VINYL CHLORIDE	0	4	ND	N/A	ND
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	4	4	113	N/A	300
1,3-DICHLOROBENZENE	3	4	7.83	N/A	19.0
1,4-DICHLOROBENZENE	3	4	46.7	N/A	65.0
3,3'-DICHLOROBENZIDINE	1	4	0.012	N/A	0.012
4-METHYLPHENOL	2	4	0.345	N/A	0.410
BENZO(A)PYRENE	0	4	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	4	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	0	4	ND	N/A	ND
BIS(2-ETHYLHEXYL)PHTHALATE	3	4	5.81	N/A	9.40
DIBENZ(A,H)ANTHRACENE	0	4	ND	N/A	ND
HEXACHLOROBENZENE	0	4	ND	N/A	ND
NAPHTHALENE	3	4	4.40	N/A	7.40
NITROBENZENE	0	4	ND	N/A	ND
III. PESTICIDES/PCB					
ALDRIN	0	2	ND	N/A	ND
AROCLOR-1242	1	2	0.082	N/A	0.082
IV. METALS					
ANTIMONY	0	4	ND	N/A	ND
ARSENIC	1	4	1.50	N/A	1.50
BARIUM	3	4	138	N/A	220
CADMIUM	1	4	0.120	N/A	0.120
COPPER	2	4	11.6	N/A	20.0
IRON	4	4	8,563	N/A	14,000
LEAD	4	4	32.2	N/A	61.0
MANGANESE	3	4	64.8	N/A	98.0
MERCURY	0	4	ND	N/A	ND
NICKEL	1	4	81.9	N/A	81.9
SELENIUM	0	4	ND	N/A	ND
THALLIUM	0	4	ND	N/A	ND
VANADIUM	4	4	183	N/A	230

TABLE 7
Summary Statistics for Chemicals of Potential Concern
Northern Depression Area

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	3	4	21,667	N/A	65,000
1,1-DICHLOROETHENE	6	10	15.2	1.03E+13	79.6
4-METHYL-2-PENTANONE	0	4	ND	N/A	ND
ACETONE	1	1	4,400	N/A	4,400
BENZENE	6	8	410	N/A	2,300
CHLOROBENZENE	1	3	270,000	N/A	270,000
DIBROMOCHLOROMETHANE	0	4	ND	N/A	ND
ETHYLBENZENE	4	7	2,677	N/A	9,300
M,P-XYLENE	6	9	7,424	N/A	39,000
METHYLENE CHLORIDE	0	0	ND	N/A	ND
O-XYLENE	5	8	3,825	N/A	16,000
TETRACHLOROETHENE	23	26	5,494	1.45E+07	110,000
TOLUENE	8	9	31,364	N/A	230,000
TRICHLOROETHENE	24	26	731	309,493	14,000
VINYL CHLORIDE	0	4	ND	N/A	ND
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	1	4	24.0	N/A	24.0
1,3-DICHLOROBENZENE	1	4	1,000	N/A	1,000
1,4-DICHLOROBENZENE	1	4	600	N/A	600
3,3'-DICHLOROBENZIDINE	1	4	2.40	N/A	2.40
4-METHYLPHENOL	0	4	ND	N/A	ND
BENZO(A)PYRENE	0	4	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	4	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	1	4	68.0	N/A	68.0
BIS(2-ETHYLHEXYL)PHTHALATE	0	1	ND	N/A	ND
DIBENZ(A,H)ANTHRACENE	0	4	ND	N/A	ND
HEXACHLOROBENZENE	0	4	ND	N/A	ND
NAPHTHALENE	1	4	15.0	N/A	15.0
NITROBENZENE	1	4	4.00	N/A	4.00
III. PESTICIDES/PCB					
ALDRIN	0	0	ND	N/A	ND
AROCLOR-1242	0	0	ND	N/A	ND
IV. METALS					
ANTIMONY	1	4	9.70	N/A	9.70
ARSENIC	0	4	ND	N/A	ND
BARIUM	4	4	119	N/A	150
CADMIUM	1	4	7.90	N/A	7.90
COPPER	1	4	84.0	N/A	84.0
IRON	4	4	13,850	N/A	24,000
LEAD	2	4	557	N/A	1,100
MANGANESE	2	4	32.5	N/A	34.0
MERCURY	0	4	ND	N/A	ND
NICKEL	2	4	195	N/A	240
SELENIUM	0	4	ND	N/A	ND
THALLIUM	1	4	52.0	N/A	52.0
VANADIUM	4	4	225	N/A	290

TABLE 8
Summary Statistics for Chemicals of Potential Concern
Pond 01

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	2	7	1.00	N/A	2.00
1,1-DICHLOROETHENE	1	7	0.180	N/A	0.180
4-METHYL-2-PENTANONE	3	6	2.51	N/A	7.40
ACETONE	0	0	ND	N/A	ND
BENZENE	2	6	0.097	N/A	0.190
CHLOROBENZENE	2	4	2.40	N/A	4.80
DIBROMOCHLOROMETHANE	0	6	ND	N/A	ND
ETHYLBENZENE	1	5	0.140	N/A	0.140
M,P-XYLENE	1	4	0.002	N/A	0.002
METHYLENE CHLORIDE	1	3	0.280	N/A	0.280
O-XYLENE	2	5	0.151	N/A	0.300
TETRACHLOROETHENE	0	5	ND	N/A	ND
TOLUENE	2	5	4.41	N/A	8.80
TRICHLOROETHENE	1	7	0.033	N/A	0.033
VINYL CHLORIDE	1	7	0.160	N/A	0.160
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	2	7	0.015	N/A	0.016
1,3-DICHLOROBENZENE	1	7	0.034	N/A	0.034
1,4-DICHLOROBENZENE	0	7	ND	N/A	ND
3,3'-DICHLOROBENZIDINE	0	7	ND	N/A	ND
4-METHYLPHENOL	2	7	0.044	N/A	0.047
BENZO(A)PYRENE	0	7	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	7	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	0	7	ND	N/A	ND
BIS(2-ETHYLHEXYL)PHTHALATE	2	3	2.70	N/A	3.70
DIBENZ(A,H)ANTHRACENE	0	7	ND	N/A	ND
HEXACHLOROBENZENE	0	7	ND	N/A	ND
NAPHTHALENE	0	7	ND	N/A	ND
NITROBENZENE	0	7	ND	N/A	ND
III. PESTICIDES/PCB					
ALDRIN	0	1	ND	N/A	ND
AROCLOR-1242	0	1	ND	N/A	ND
IV. METALS					
ANTIMONY	0	7	ND	N/A	ND
ARSENIC	1	7	3.30	N/A	3.30
BARIUM	7	7	104	N/A	170
CADMIUM	1	7	0.400	N/A	0.400
COPPER	1	7	12.2	N/A	12.2
IRON	7	7	9,129	N/A	14,000
LEAD	2	7	43.1	N/A	65.0
MANGANESE	3	7	42.7	N/A	57.0
MERCURY	0	7	ND	N/A	ND
NICKEL	1	7	3.20	N/A	3.20
SELENIUM	1	7	0.950	N/A	0.950
THALLIUM	0	7	ND	N/A	ND
VANADIUM	7	7	173	N/A	220

TABLE 9
Summary Statistics for Chemicals of Potential Concern
Pond 02

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	4	12	61.7	4.93E+09	140
1,1-DICHLOROETHENE	2	12	9.20	2.04E+07	12.0
4-METHYL-2-PENTANONE	5	12	12.5	2.78E+07	38.0
ACETONE	1	3	270	N/A	270
BENZENE	6	12	9.15	1.31E+08	35.0
CHLOROBENZENE	8	9	104	N/A	390
DIBROMOCHLOROMETHANE	0	12	ND	3.23E+06	ND
ETHYLBENZENE	5	11	38.9	1.84E+11	100
M,P-XYLENE	8	11	105	2.41E+15	580
METHYLENE CHLORIDE	2	4	283	N/A	550
O-XYLENE	7	11	58.6	4.40E+12	300
TETRACHLOROETHENE	7	10	122	4.43E+14	630
TOLUENE	8	10	52.6	8.57E+09	200
TRICHLOROETHENE	5	12	26.4	1.35E+09	95.0
VINYL CHLORIDE	1	12	0.970		0.970
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	3	12	0.513	1,430	0.600
1,3-DICHLOROBENZENE	0	12	ND	8,790	ND
1,4-DICHLOROBENZENE	4	12	24.1	168,000	65.0
3,3'-DICHLOROBENZIDINE	0	12	ND	17,600	ND
4-METHYLPHENOL	5	12	4.11	44,600	20.0
BENZO(A)PYRENE	0	12	ND	8,790	ND
BENZO(B)FLUORANTHENE	0	12	ND	8,790	ND
BIS(2-CHLOROETHYL)ETHER	0	12	ND	8,790	ND
BIS(2-ETHYLHEXYL)PHTHALATE	3	5	86.0	N/A	200
DIBENZ(A,H)ANTHRACENE	0	12	ND	8,790	ND
HEXACHLOROBENZENE	0	12	ND	8,790	ND
NAPHTHALENE	5	12	4.71	71,300	12.0
NITROBENZENE	0	12	ND	8,790	ND
III. PESTICIDES/PCB					
ALDRIN	0	2	ND	N/A	ND
AROCLOR-1242	0	2	ND	N/A	ND
IV. METALS					
ANTIMONY	1	12	8.40	3.83	8.40
ARSENIC	0	12	ND	5.37	ND
BARIUM	12	12	114	175	200
CADMIUM	1	12	26.0	7.12	26.0
COPPER	1	12	20.0	12.1	20.0
IRON	12	12	10,806	18,900	25,000
LEAD	5	12	116	119	510
MANGANESE	8	12	50.9	126	75.0
MERCURY	0	12	ND	5.42	ND
NICKEL	1	12	250	74.3	250
SELENIUM	0	12	ND	3.73	ND
THALLIUM	1	12	25.0	13.7	25.0
VANADIUM	12	12	173	193	220

TABLE 10
Summary Statistics for Chemicals of Potential Concern
Pond 03

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	9	15	0.388	4,160	1.80
1,1-DICHLOROETHENE	1	15	0.040	18.6	0.040
4-METHYL-2-PENTANONE	8	14	2.20	72,600	13.0
ACETONE	0	0	ND	N/A	ND
BENZENE	7	13	0.034	65.1	0.170
CHLOROBENZENE	9	12	64.9	1.56E+08	580
DIBROMOCHLOROMETHANE	0	15	ND	45.5	ND
ETHYLBENZENE	11	13	16.4	507,000	180
M,P-XYLENE	10	12	62.0	2.93E+08	620
METHYLENE CHLORIDE	0	2	ND	N/A	ND
O-XYLENE	11	13	56.4	1.08E+07	620
TETRACHLOROETHENE	6	11	108	1.33E+08	650
TOLUENE	6	8	0.602	N/A	1.00
TRICHLOROETHENE	8	15	0.433	1,490	1.80
VINYL CHLORIDE	2	15	0.018	61.1	0.033
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	1	15	14.0	1,410	14.0
1,3-DICHLOROBENZENE	0	15	ND	1,560	ND
1,4-DICHLOROBENZENE	1	15	200	11,400	200
3,3'-DICHLOROBENZIDINE	0	15	ND	3,130	ND
4-METHYLPHENOL	2	15	0.039	2,630	0.045
BENZO(A)PYRENE	0	15	ND	1,560	ND
BENZO(B)FLUORANTHENE	0	15	ND	1,560	ND
BIS(2-CHLOROETHYL)ETHER	0	15	ND	1,560	ND
BIS(2-ETHYLHEXYL)PHTHALATE	0	6	ND	N/A	ND
DIBENZ(A,H)ANTHRACENE	0	15	ND	1,560	ND
HEXACHLOROBENZENE	0	15	ND	1,560	ND
NAPHTHALENE	1	14	8.60	1,220	8.60
NITROBENZENE	0	15	ND	1,560	ND
III. PESTICIDES/PCB					
ALDRIN	0	7	ND	N/A	ND
AROCLOR-1242	0	7	ND	N/A	ND
IV. METALS					
ANTIMONY	1	15	8.70	3.75	8.70
ARSENIC	2	15	0.785	7.47	0.950
BARIUM	15	15	55.1	67.6	80.0
CADMIUM	4	15	17.7	16.2	32.0
COPPER	4	15	5.55	13.2	12.9
IRON	15	15	8,195	10,400	19,000
LEAD	8	15	76.3	132	550
MANGANESE	8	15	48.8	57.1	95.0
MERCURY	0	15	ND	5.33	ND
NICKEL	3	15	34.9	95.6	97.0
SELENIUM	1	15	0.770	4.07	0.770
THALLIUM	1	15	51.0	17.9	51.0
VANADIUM	15	15	144	176	200

TABLE 11
Summary Statistics for Chemicals of Potential Concern
Soil Piles

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	1	9	0.470	N/A	0.470
1,1-DICHLOROETHENE	1	9	0.014	N/A	0.014
4-METHYL-2-PENTANONE	4	9	1.22	N/A	4.50
ACETONE	0	0	ND	N/A	ND
BENZENE	3	8	0.024	N/A	0.045
CHLOROBENZENE	8	9	2.02	N/A	14.0
DIBROMOCHLOROMETHANE	0	9	ND	N/A	ND
ETHYLBENZENE	6	9	0.259	N/A	0.820
M,P-XYLENE	6	9	0.380	N/A	1.50
METHYLENE CHLORIDE	1	6	0.055	N/A	0.055
O-XYLENE	5	9	0.412	N/A	1.30
TETRACHLOROETHENE	5	9	0.409	N/A	1.40
TOLUENE	5	9	1.63	N/A	6.50
TRICHLOROETHENE	4	9	0.302	N/A	1.00
VINYL CHLORIDE	1	9	0.430	N/A	0.430
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	8	9	0.069	N/A	0.250
1,3-DICHLOROBENZENE	1	9	0.015	N/A	0.015
1,4-DICHLOROBENZENE	7	9	0.071	N/A	0.120
3,3'-DICHLOROBENZIDINE	0	9	ND	N/A	ND
4-METHYLPHENOL	2	9	0.084	N/A	0.150
BENZO(A)PYRENE	0	9	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	9	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	0	9	ND	N/A	ND
BIS(2-ETHYLHEXYL)PHTHALATE	2	2	0.865	N/A	1.00
DIBENZ(A,H)ANTHRACENE	0	9	ND	N/A	ND
HEXACHLOROBENZENE	0	9	ND	N/A	ND
NAPHTHALENE	0	0	ND	N/A	ND
NITROBENZENE	0	9	ND	N/A	ND
III. PESTICIDES/PCB					
ALDRIN	0	9	ND	N/A	ND
AROCLOR-1242	0	9	ND	N/A	ND
IV. METALS					
ANTIMONY	0	9	ND	N/A	ND
ARSENIC	0	9	ND	N/A	ND
BARIUM	9	9	189	N/A	220
CADMIUM	0	9	ND	N/A	ND
COPPER	1	9	22.0	N/A	22.0
IRON	9	9	13,889	N/A	15,000
LEAD	6	9	39.7	N/A	140
MANGANESE	6	9	72.0	N/A	110
MERCURY	0	9	ND	N/A	ND
NICKEL	0	9	ND	N/A	ND
SELENIUM	0	9	ND	N/A	ND
THALLIUM	0	9	ND	N/A	ND
VANADIUM	9	9	200	N/A	220

TABLE 12
Summary Statistics for Chemicals of Potential Concern
Soil Staging Area

Chemical	Detects	Samples	Concentration (mg/kg)		
			Average of Detects	95% UCL	Maximum Detect
I. VOLATILE ORGANIC COMPOUNDS					
1,1,1-TRICHLOROETHANE	1	3	0.013	N/A	0.013
1,1-DICHLOROETHENE	0	3	ND	N/A	ND
4-METHYL-2-PENTANONE	1	2	0.830	N/A	0.830
ACETONE	0	0	ND	N/A	ND
BENZENE	2	3	0.088	N/A	0.170
CHLOROBENZENE	2	2	3.827	N/A	7.600
DIBROMOCHLOROMETHANE	0	3	ND	N/A	ND
ETHYLBENZENE	1	3	0.180	N/A	0.180
M,P-XYLENE	1	2	0.010	N/A	0.010
METHYLENE CHLORIDE	0	0	ND	N/A	ND
O-XYLENE	1	2	0.006	N/A	0.006
TETRACHLOROETHENE	0	2	ND	N/A	ND
TOLUENE	1	1	0.071	N/A	0.071
TRICHLOROETHENE	1	2	0.003	N/A	0.003
VINYL CHLORIDE	0	3	ND	N/A	ND
II. SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-TRICHLOROBENZENE	1	3	0.050	N/A	0.050
1,3-DICHLOROBENZENE	0	3	ND	N/A	ND
1,4-DICHLOROBENZENE	0	3	ND	N/A	ND
3,3'-DICHLOROBENZIDINE	0	3	ND	N/A	ND
4-METHYLPHENOL	0	3	ND	N/A	ND
BENZO(A)PYRENE	0	3	ND	N/A	ND
BENZO(B)FLUORANTHENE	0	3	ND	N/A	ND
BIS(2-CHLOROETHYL)ETHER	0	3	ND	N/A	ND
BIS(2-ETHYLHEXYL)PHTHALATE	0	0	ND	N/A	ND
DIBENZ(A,H)ANTHRACENE	0	3	ND	N/A	ND
HEXACHLOROBENZENE	0	3	ND	N/A	ND
NAPHTHALENE	0	3	ND	N/A	ND
NITROBENZENE	0	3	ND	N/A	ND
III. PESTICIDES/PCB					
ALDRIN	0	1	ND	N/A	ND
AROCLOR-1242	0	1	ND	N/A	ND
IV. METALS					
ANTIMONY	0	3	ND	N/A	ND
ARSENIC	0	3	ND	N/A	ND
BARIUM	3	3	97.3	N/A	170
CADMIUM	0	3	ND	N/A	ND
COPPER	0	3	ND	N/A	ND
IRON	3	3	9,133	N/A	13,000
LEAD	1	3	11.0	N/A	11.0
MANGANESE	2	3	50.0	N/A	66.0
MERCURY	0	3	ND	N/A	ND
NICKEL	1	3	160	N/A	160
SELENIUM	0	3	ND	N/A	ND
THALLIUM	0	3	ND	N/A	ND
VANADIUM	3	3	157	N/A	200

TABLE 13
Toxicity Values for Chemicals of Potential Concern

Chemicals of Potential Concern in Surface Soil

Chemical	Oral Slope Factor $(mg/kg\text{-}day)^{-1}$	Chronic Oral RfD (mg/kg-day)	Dermal Slope Factor[g] $(mg/kg\text{-}day)^{-1}$	Chronic Dermal RfD[g] (mg/kg-day)
Volatiles				
1,1,1-Trichloroethane	--	0.0035[a]	--	0.0032[a]
Benzene	0.029	--	0.030	--
Chlorobenzene	--	0.02	--	0.006
Dibromochloromethane	0.02	0.084	0.033	0.05
Tetrachloroethylene	0.052[a]	0.01	0.052[a]	0.01
Toluene	--	0.2	--	0.16
Trichloroethylene	0.011[a]	0.006[a]	0.011[a]	0.006[a]
Semivolatiles				
Bis(2-chloroethyl)ether	1.1	--	1.1	--
1,4-Dichlorobenzene	0.024[b]	--	0.027[b]	--
Hexachlorobenzene	1.6	0.0008	2.0	0.0006
4-Methylphenol	--	0.005[b]	--	0.0045[b]
Pesticides/PCBs				
Aldrin	17	0.00003	34	0.000015
Aroclor 1242	2.0	0.00002[c]	2.2	0.000018[c]
Metals				
Antimony	--	0.0004	--	4×10^{-6}
Arsenic	1.5	0.0003	1.6	0.00029
Barium	--	0.07	--	0.005
Cadmium[d]	--	0.0005	--	0.000025
Chromium[e]	--	0.005	--	0.0001
Copper	--	0.04[a]	--	0.02[a]
Iron	--	0.3[a]	--	0.045[a]
Lead[f]	--	--	--	--
Mercury	--	0.0003[b]	--	0.00006[b]
Selenium	--	0.005	--	0.003
Vanadium	--	0.007[b]	--	0.0002[b]

TABLE 13 (Continued)
Toxicity Values for Chemicals of Potential Concern

Chemicals of Potential Concern in Air		
Chemical	**Inhalation Slope Factor $(mg/kg\text{-}day)^{-1}$**	**Chronic Inhalation Reference Dose (mg/kg-day)**
1,1,1-Trichloroethane	--	0.29[a]
1,1,2-Trichloroethane	0.056	--
1,1-Dichloroethylene	0.18	--
cis-1,2-Dichloroethylene	--	--
1,2-Dichloroethane	0.091	0.0029[a]
1,4-Dichlorobenzene	--	0.23
Benzene	0.029	0.0017[a]
Chlorobenzene	--	0.0057[b]
Chloroform	0.081	--
Tetrachloroethylene	0.002[a]	--
Toluene	--	0.11
Trichloroethylene	0.006[a]	--
Vinyl chloride	0.3[b]	--

Notes:
All values derived from IRIS (USEPA 1998) unless otherwise noted.
a - Toxicity value from USEPA Region 3 RBC Table (EPA-NCEA Regional support provisional value).
b - USEPA 1997a (Health Effects Assessment Summary Tables)
c - Value based on oral RfD for Aroclor 1254.
d - Based on cadmium in water; RfD based on cadmium in food is 0.001 mg/kg-day
e - All toxicity values for chromium are for hexavalent chromium
f - Neither an RfD nor a SF value is available for lead. In this assessment, estimated concentrations of lead are compared to a USEPA-derived screening-level concentration of lead in soil.
g - Deraml toxicity values were developed from oral toxicity values by applying a GI absorption factor (Appendix E).

TABLE 14
Toxicity Values for Chemicals of Potential Concern

Chemical	Oral RfD (mg/kg/d)	Oral Slope Factor $(mg/kg/d)^{-1}$	Dermal RfD[f] (mg/kg/d)	Dermal Slope Factor[f] $(mg/kg/d)^{-1}$	Inhalation RfD (mg/kg/d)	Inhalation Slope Factor $(mg/kg/d)^{-1}$
Volatile Organic Compounds						
1,1,1-Trichloroethane	0.02[a]	--	0.018	--	0.286[a]	--
1,1-Dichloroethene	0.009	0.6	0.0090	0.60	--	0.175
4-Methyl-2-pentanone	0.08[b]	--	0.064	--	0.02[h]	--
Acetone	0.1	--	0.083	--	--	--
Benzene	0.003[a]	0.029	0.00291	0.030	0.0017[a]	0.029
Chlorobenzene	0.02	--	0.0062	--	0.005[h]	--
Dibromochloromethane	0.02	0.084	0.012	0.14	--	--
Ethylbenzene	0.1	--	0.082	--	0.29	--
m,p-Xylene	2[b]	--	2	--	--	--
Methylene chloride	0.06	0.0075	0.057	0.00789	0.86[b]	0.00165
o-Xylene	2[b]	--	2	--	--	--
Tetrachloroethene	0.01	0.052[a]	0.01	0.052	0.14[a]	0.002[a]
Toluene	0.2	--	0.16	--	0.114	--
Trichloroethene	0.006[a]	0.011[a]	0.006	0.011	--	0.006[a]
Vinyl chloride	--	1.9[b]	--	1.9	--	0.3[b]
Semivolatile Organic Compounds						
1,2,4-Trichlorobenzene	0.01	--	0.0042	--	0.057[b]	--
1,3-Dichlorobenzene	0.03[a]	--	0.027	--	0.002[a]	--
1,4-Dichlorobenzene	0.03[a]	0.024[b]	0.027	0.0267	0.229	0.022[a]
3,3'-Dichlorobenzidine	--	0.45	--	0.45	--	--
4-Methylphenol	0.005[b]	--	0.0045	--	--	--
Benzo(a)pyrene	--	7.3	--	12.59	--	3.1[a]
Benzo(b)fluoranthene	--	0.73	--	1.26	--	--
Bis(2-chloroethyl)ether	--	1.1	--	1.1	--	1.1
Bis(2-ethylhexyl)phthalate	0.02	0.014	0.011	0.0255	--	0.014[a]
Dibenz(a,h)anthracene	--	7.3[i]	--	12.59	--	--
Hexachlorobenzene	0.0008	1.6	0.00064	2	--	1.6
Naphthalene	0.02	--	0.016	--	0.0009	--
Nitrobenzene	0.0005	--	0.000485	--	0.0006[h]	--

TABLE 14 (Continued)
Toxicity Values for Chemicals of Potential Concern

Pesticides/ PCBs						
Aldrin	0.00003	17	0.000015	34	--	17
Aroclor-1242[c]	--	2	--	2.22	--	0.4
Metals						
Antimony	0.0004	--	0.000004	--	--	--
Arsenic	0.0003	1.5	0.000285	1.58	--	15.1
Barium	0.07	--	0.0049	--	0.00014[h]	--
Cadmium[d]	0.001	--	0.00005	--	--	6.3
Copper	--	--	--	--	--	--
Iron	0.3[a]	--	0.045	--	--	--
Lead[e]	--	--	--	--	--	--
Manganese	0.02	--	0.001	--	0.0000143	--
Mercury	0.0003[j]	--	0.00006	--	0.000086	--
Nickel	0.02	--	0.0054	--	--	--
Selenium	0.005	--	0.003	--	--	--
Thallium	0.00007[g]	--	0,0000105	--	--	--
Vanadium	0.007[b]	--	0.00021	--	--	--

Notes:
All values derived from IRIS (USEPA 1998) unless otherwise noted.
a - Toxicity value from USEPA Region 3 RBC Table (EPA-NCEA Regional support provisional value).
b - USEPA 1997a (Health Effects Assessment Summary Tables [HEAST])
c - Value based on oral RfD for Aroclor 1254.
d - Based on cadmium in food; RfD based on cadmium in water is 0.0005 mg/kg-day
e - Neither an RfD nor a SF value is available for lead. In this assessment, estimated concentrations of lead are compared to a USEPA-derived screening-level concentration of lead in soil.
f - Dermal toxicity values were developed from oral toxicity values by applying a GI absorption factor (Appendix F).
g - Value for thallium not available; therefore, value for thallic oxide was applied.
h - HEAST; Alternate method.
i - Based on the value benzo(a)pyrene using a relative potency approach outline by USEPA 1993b.
j - Based on the toxicity value for mercuric chloride.

TABLE 15
Estimated Total Cancer Risks and Noncancer Hazard Index Values Associated with Exposure to the Pond 2 Trespasser

Pathway	Cancer Risk		Noncancer HI Value	
	CTE	RME	CTE	RME
Risks Associated with Pond 2				
Soil Ingestion	7×10^{-6}	1×10^{-5}	0.6	1.2
Dermal Contact	2×10^{-3}	3×10^{-3}	301	423
Vapor Inhalation	4×10^{-9}	1×10^{-8}	0.0006	0.002
Total	2×10^{-3}	3×10^{-3}	301	424
Site-Wide Risks				
Soil Ingestion	4×10^{-7}	1×10^{-6}	0.1	0.3
Dermal Contact	1×10^{-8}	5×10^{-8}	0.02	0.06
Vapor Inhalation	2×10^{-7}	2×10^{-7}	0.02	0.04
Total	6×10^{-7}	1×10^{-6}	0.1	0.4
Total Risks to the Pond 2 Trespasser				
Soil Ingestion	8×10^{-6}	2×10^{-5}	0.7	1.2
Dermal Contact	2×10^{-3}	3×10^{-3}	301	423
Vapor Inhalation	2×10^{-7}	2×10^{-7}	0.02	0.04
Total	2×10^{-3}	3×10^{-3}	301	424

TABLE 16
Estimated Total Cancer Risks and Noncancer Hazard Index Values Associated with Exposure to Chemicals in Soil and Air (Site-Wide[a])

Pathway	Industrial Worker		Maintenance Worker		On-Site Resident		Trespassing Child		Off-Site Resident	
	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME
Estimated Excess Cancer Risk										
Soil Ingestion	4×10^{-8}	7×10^{-7}	1×10^{-8}	3×10^{-7}	7×10^{-7}	7×10^{-6}	2×10^{-8}	5×10^{-8}	NA	NA
Dermal Contact	6×10^{-9}	1×10^{-7}	2×10^{-9}	5×10^{-8}	2×10^{-8}	2×10^{-7}	2×10^{-9}	5×10^{-9}	NA	NA
Vapor Inhalation	2×10^{-8}	3×10^{-7}	4×10^{-10}	8×10^{-9}	1×10^{-7}	7×10^{-7}	1×10^{-9}	3×10^{-9}	2×10^{-7}	9×10^{-7}
Total Cancer Risk	7×10^{-8}	1×10^{-6}	2×10^{-8}	4×10^{-7}	9×10^{-7}	8×10^{-6}	3×10^{-8}	5×10^{-8}	2×10^{-7}	9×10^{-7}
Estimated Noncancer Hazard Index (HI) Values										
Soil Ingestion	1×10^{-2}	5×10^{-2}	5×10^{-3}	2×10^{-2}	1×10^{-1}	3×10^{-1}	6×10^{-3}	1×10^{-2}	NA	NA
Dermal Contact	8×10^{-3}	3×10^{-2}	3×10^{-3}	1×10^{-2}	1×10^{-2}	5×10^{-2}	2×10^{-3}	5×10^{-3}	NA	NA
Vapor Inhalation	3×10^{-3}	1×10^{-2}	7×10^{-5}	3×10^{-4}	1×10^{-2}	2×10^{-2}	1×10^{-4}	5×10^{-4}	3×10^{-2}	4×10^{-2}
Total HI Value	3×10^{-2}	9×10^{-2}	7×10^{-3}	3×10^{-2}	2×10^{-1}	4×10^{-1}	8×10^{-3}	2×10^{-2}	3×10^{-2}	4×10^{-2}

Notes:
NA - Not applicable
Total cancer risks and HI values may not be equivalent to the sum of the individual pathway risks due to rounding.
a - Risks based on exposure in areas of site outside of the Pond 2 hot spot.

TABLE 17 Total Estimated Cancer Risks for MSGS Source Areas				
Area	On-site Industrial Worker		On-site Resident	
	CTE	RME	CTE	RME
ASP1	4×10^{-7}	7×10^{-6}	6×10^{-6}	5×10^{-5}
BWA	3×10^{-5}	2×10^{-4}	2×10^{-4}	5×10^{-4}
NDA	1×10^{-4}	1×10^{-3}	1×10^{-3}	1×10^{-2}
Pond 01	5×10^{-7}	4×10^{-6}	3×10^{-6}	2×10^{-5}
Pond 02	9×10^{-6}	8×10^{-5}	6×10^{-5}	2×10^{-4}
Pond 03	1×10^{-6}	1×10^{-5}	1×10^{-5}	7×10^{-5}
SP	6×10^{-7}	4×10^{-6}	3×10^{-6}	1×10^{-5}
SSA	2×10^{-9}	2×10^{-8}	1×10^{-8}	4×10^{-8}

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 18
Total Estimated HI Values for MSGS Source Areas

Area	On-site Industrial Worker		On-site Resident	
	CTE	RME	CTE	RME
ASP1	0.04	0.1	0.3	0.8
BWA	0.4	0.8	2	2
NDA	27	52	114	183
Pond 01	0.03	0.09	0.2	0.4
Pond 02	0.4	0.8	2	3
Pond 03	0.5	1	2	5
SP	0.03	0.09	0.1	0.4
SSA	0.02	0.08	0.1	0.4

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 19 Estimated Cancer Risks Associated with Ingestion of On-Site Soils				
Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	3×10^{-7}	6×10^{-6}	6×10^{-6}	5×10^{-5}
BWA	7×10^{-7}	1×10^{-5}	1×10^{-5}	1×10^{-4}
NDA	6×10^{-5}	1×10^{-3}	1×10^{-3}	1×10^{-2}
Pond 01	6×10^{-8}	9×10^{-7}	9×10^{-7}	8×10^{-6}
Pond 02	5×10^{-7}	9×10^{-6}	9×10^{-6}	8×10^{-5}
Pond 03	4×10^{-7}	7×10^{-6}	7×10^{-6}	6×10^{-5}
SP	1×10^{-8}	2×10^{-7}	2×10^{-7}	1×10^{-6}
SSA	5×10^{-11}	9×10^{-10}	8×10^{-10}	8×10^{-9}

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 20
Estimated Cancer Risks Associated with Dermal Contact with On-Site Soils

Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	5×10^{-8}	9×10^{-7}	1×10^{-7}	2×10^{-6}
BWA	4×10^{-8}	7×10^{-7}	1×10^{-7}	1×10^{-6}
NDA	8×10^{-6}	2×10^{-4}	2×10^{-5}	3×10^{-4}
Pond 01	7×10^{-9}	1×10^{-7}	2×10^{-8}	3×10^{-7}
Pond 02	7×10^{-8}	1×10^{-6}	2×10^{-7}	3×10^{-6}
Pond 03	7×10^{-8}	1×10^{-6}	2×10^{-7}	2×10^{-6}
SP	2×10^{-10}	5×10^{-9}	8×10^{-10}	9×10^{-9}
SSA	1×10^{-13}	3×10^{-12}	5×10^{-13}	5×10^{-12}

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 21
Estimated Cancer Risks Associated with Inhalation of Vapors

Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	0	0	0	0
BWA	2×10^{-5}	2×10^{-4}	1×10^{-4}	4×10^{-4}
NDA	3×10^{-5}	3×10^{-4}	2×10^{-4}	5×10^{-4}
Pond 01	4×10^{-7}	3×10^{-6}	2×10^{-6}	6×10^{-6}
Pond 02	9×10^{-6}	6×10^{-5}	5×10^{-5}	1×10^{-4}
Pond 03	6×10^{-7}	5×10^{-6}	4×10^{-6}	9×10^{-6}
SP	5×10^{-7}	4×10^{-6}	3×10^{-6}	8×10^{-6}
SSA	2×10^{-9}	2×10^{-8}	1×10^{-8}	3×10^{-8}

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 22
Estimated Noncancer Risks Associated with Ingestion of On-Site Soils

Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	0.03	0.1	0.3	0.7
BWA	0.046	0.15	0.4	1.1
NDA	5	16	43	121
Pond 01	0.014	0.05	0.13	0.35
Pond 02	0.07	0.2	0.6	2
Pond 03	0.1	0.5	1.3	4
SP	0.013	0.04	0.1	0.3
SSA	0.01	0.04	0.1	0.3

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 23
Estimated Noncancer Risks Associated with Dermal Contact with On-Site Soils

Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	0.01	0.04	0.02	0.07
BWA	0.02	0.07	0.03	0.1
NDA	1.0	4	2	7
Pond 01	9×10^{-3}	0.03	0.02	0.05
Pond 02	0.03	0.1	0.05	0.2
Pond 03	0.06	0.2	0.1	0.3
SP	9×10^{-3}	0.04	0.02	0.06
SSA	8×10^{-3}	0.03	0.01	0.05

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

TABLE 24 Estimated Noncancer Risks Associated with Inhalation of Vapors				
Area	On-Site Industrial Worker		On-Site Resident	
	CTE	RME	CTE	RME
ASP1	2×10^{-6}	3×10^{-6}	6×10^{-6}	5×10^{-6}
BWA	0.38	0.56	1.2	1.0
NDA	21	32	69	55
Pond 01	3×10^{-3}	5×10^{-3}	0.01	9×10^{-3}
Pond 02	0.3	0.45	1.0	0.8
Pond 03	0.3	0.4	0.8	0.7
SP	4×10^{-3}	6×10^{-3}	0.01	0.01
SSA	3×10^{-3}	5×10^{-3}	0.01	8×10^{-3}

Area Key ASP1 = Area South of Pond 01; BWA=Buried Waste Area; NDA=Northern Depression Area; SP=Soil Piles; and SSA=Soil Staging Area

Table 25
Preliminary Action Levels for Soil and Sediment [1]

Constituent of Concern	Direct Contact 10-4 (HQ=1) (mg/kg) [2]	Principal Threat to Ground Water (mg/kg) [3]	Pond 2 Wet Direct Contact 10-4 (HQ=1) (mg/kg) [4]
	A	B	C
Volatile Organics			
1,1,1-trichloroethane	5,471	7,300	[6]
1,1-dichloroethane	[5]	1,800	[6]
1,1-Dichloroethene	13,600	770	[6]
1,3-Dichlorobenzene	[5]	13	[6]
1,2-dichloroethane	[5]	2.7	[6]
acetone	[5]	1,400	[6]
benzene	2201	7.3	[6]
chlorobenzene	5002	250	820
chloroethane	[5]	82	[6]
cis-1,2-dichloroethene	[5]	140	[6]
methylene chloride	8511	93	[6]
methyl ethyl ketone	[5]	4,300	[6]
methyl isobutyl ketone	[5]	320	[6]
tetrachloroethene	1193	25	1,307
toluene	52,811	1,700	20,990
total 1,2-dichloroethene	[5]	120	[6]
trans-1,2-dichloroethene	[5]	270	[6]
trichloroethene	5,641	36	784
vinyl chloride	34	0.91	[6]
dibromochloromethane	[5]	[7]	4,608
Semi-volatile Organics			
1,4-dichlorobenzene	2,401	1.1	1,738
2-chlorophenol	[5]	68	[6]
naphthalene	[5]	29	[6]
bis (2-chloroethyl) ether	53	[7]	42
bis (2-ethylhexyl) phthalate	3,875	[7]	[6]
3,3-dichlorobenzidine	129	[7]	[6]
hexachlorobenzene	[5]	[7]	23
PCBs / Pesticides			
PCBs	5	[7]	1.2
aldrin	3	[7]	0.6
Inorganics			
antimony	55	[7]	1.6
arsenic	41	[7]	[6]
barium	[5]	[7]	1,948
cadmium	229	[7]	10
chromium	920	[7]	40
iron	[5]	[7]	17,819
lead	400 [8]	[7]	400 [8]
mercury	78	[7]	24
thallium	18	[7]	[6]
vanadium	1,446	[7]	73

Table 25 (cont.)

[1] For soil, sediment and waste material within the Eastern Excavation Area, excluding Pond 2 Wet surface soil/sediment, the preliminary action level is the lower standard given in columns A and B; for Pond 2 Wet surface soil/sediment, the preliminary action level is the lower standard given in columns B and C. If multiple contaminants are present, some soil, sediment and waste material which would not be selected for remedial action based on a comparison of individual contaminant concentrations with the preliminary action levels in this table may still meet the definition of Ground Water Principal Threat material or Direct Contact Low-level Threat material given in section 7.1.7 of this ROD. In such cases, the cumulative risks associated with direct contact with the material, and the use of ground water which may be impacted by the material, shall be calculated. The determination of whether the material constitutes a Ground Water Principal Threat or a Direct Contact Low-level Threat shall be based on these cumulative risk calculations.
[2] Site-specific Direct Contact Low-level Threat criteria based on residential exposure to dry soil.
[3] Site-specific criteria for material that could cause ground water to present a principal threat if used as a potable water supply.
[4] Site-specific Direct Contact Low-level Threat criteria based on trespasser exposure to wet surface soil and sediment.
[5] Not a chemical of concern for direct contact exposure with dry surface soil in the Eastern Excavation Area (excluding the Pond 2 Wet area).
[6] Not a chemical of concern for direct contact exposure to wet surface soil and sediment in the Pond 2 Wet area.
[7] Not a chemical of concern in ground water at the Site.
[8] EPA OSWER Directive 9200.4-27P ("Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," August 1998) establishes a standard of 400 mg/kg for lead in soil on residential properties.

TABLE 26
Assessment Endpoints and Representative Ecological Receptors for the MSGS Site

Assessment Endpoint and Representative Receptor	Foraging Guild	MSGS Area Habitat Type	Exposure Point Media	Ranges Beyond MSGS Site?
Protection of the Plant Community from Adverse Ecological Changes Due to Contaminant Exposure				
Terrestrial Plants	NA	Grassland and Quarry	Soil	No
Semi-aquatic plants	NA	Wetland	Sediments	No
Aquatic plants	NA	Pond/Wetland	Water	No
Protection of the Terrestrial Vertebrate Populations from Adverse Ecological Changes Due to Contaminant Exposure				
Red-Tailed Hawk	Carnivore	Grassland, Quarry and Woodland	Soil and Surface Water	Yes
American Robin	Probing Insectivore	Grassland, Quarry and Woodland	Soil and Surface Water	Yes
Eastern Cottontail Rabbit	Grazing Herbivore	Grassland, Quarry and Woodland	Soil and Surface Water	No
White-footed mouse	Herbivore	Grassland, Quarry and Woodland	Soil and Surface Water	No
Shrew	Gleaning Insectivore	Grassland, Woodland, Wetland	Soil and Surface Water	No
Protection of the Soil Invertebrate Populations from Adverse Ecological Changes Due to Contaminant Exposure				
Soil Macroinvertebrates	NA	Grassland, Quarry and Woodland	Soil	No
Protection of the Aquatic Vertebrate and Invertebrate Populations from Adverse Ecological Changes Due to Contaminant Exposure				
Benthic Macroinvertebrates	NA	Wetland, Pond	Sediment, Surface Water	No
Fish (*Lepomis* sp.)	NA	Wetland, Pond	Surface Water	No
Muskrat	Semi-aquatic Herbivore	Wetland, Pond	Sediment, Surface Water	No
Belted Kingfisher	Piscivore	Wetland, Pond	Surface Water	Yes

TABLE 27
Summary of Direct and Indirect (Foodweb) Exposure
Chemicals of Potential Ecological Concern.

Assessment Endpoint	Chemicals of Concern
1. Protection of the Soil Invertebrate Populations from Adverse Ecological Changes Related to Contaminant Exposure	Iron, Selenium, Vanadium
2. Protection of the Plant Community from Adverse Ecological Changes Related to Contaminant Exposure	Barium, Iron, Lead, Selenium, Vanadium
3. Protection of the Aquatic Vertebrate and Invertebrate Community from Adverse Ecological Changes Related to Contaminant Exposure	Barium, Iron, Lead
4. Protection of the Terrestrial Vertebrate Communities from Adverse Ecological Changes Related to Contaminant Exposure	1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2,4-trichlorobenzene hexachlorobenzene hexachlorobutadiene hexachlorocyclopentadiene alpha chlordane gamma chlordane alpha BHC delta BHC gamma BHC dieldrin endosulfan I endosulfan II endosulfan sulfate endrin endrin ketone heptachlor heptachlor epoxide 4,4'-DDT 4,4'-DDD 4,4'-DDE aroclor 1016 aroclor 1221 aroclor 1232 aroclor 1242 aroclor 1248 aroclor 1254 aroclor 1260 barium iron lead mercury selenium vanadium

Table 28
Preliminary Treatment Standards for Soils [1]

Constituent of Concern	Direct Contact 10-6 (HQ=1) (mg/kg) [2]	Direct Contact 10-4 (HQ=1) (mg/kg) [3]	LDR Soil Treatment Standard (mg/kg) [4]	SSLs for Ground Water Protection (mg/kg) [5]
	A	B	C	D
Volatile Organics				
1,1,1-trichloroethane	5,471	5,471	60	4.57
1,1-dichloroethane	[6]	[6]	[7]	0.11
1,1-Dichloroethene	13,600	13,600	[7]	0.16
1,3-Dichlorobenzene	[6]	[6]	60	0.13
1,2-dichloroethane	[6]	[6]	[7]	0.11
acetone	[6]	[6]	1,600	13.93
benzene	22.01	2,201	100	0.11
chlorobenzene	5,002	5,002	60	2.28
chloroethane	[6]	[6]	[7]	8.22
cis-1,2-dichloroethene	[6]	[6]	[7]	1.39
methylene chloride	85.11	8,511	300	0.11
methyl ethyl ketone	[6]	[6]	360	43.4
methyl isobutyl ketone	[6]	[6]	330	3.2
tetrachloroethene	11.93	1,193	60	0.11
toluene	52,811	52,811	100	17.13
total 1,2-dichloroethene	[6]	[6]	[7]	1.26
trans-1,2-dichloroethene	[6]	[6]	[7]	2.28
trichloroethene	56.41	5,641	60	0.11
vinyl chloride	0.34	34	[7]	0.09
n-butyl alcohol	[6]	[6]	26	[8]
carbon tetrachloride	[6]	[6]	60	[8]
ethyl acetate	[6]	[6]	330	[8]
ethyl benzene	[6]	[6]	100	[8]
ethyl ether	[6]	[6]	1,600	[8]
isobutyl alcohol	[6]	[6]	1,700	[8]
pyridine	[6]	[6]	160	[8]
1,1,2-trichloroethane	[6]	[6]	60	[8]
1,1,2-trichloro-1,2,2-trifluoroethane	[6]	[6]	300	[8]
trichloromonofluoromethane	[6]	[6]	300	[8]
xylenes-mixed isomers	[6]	[6]	300	[8]
Semi-volatile Organics				
1,4-dichlorobenzene	24.01	2,401	[7]	0.011
2-chlorophenol	[6]	[6]	[7]	0.69
naphthalene	[6]	[6]	[7]	0.3
bis (2-chloroethyl) ether	0.53	53	[7]	[8]
bis (2-ethylhexyl) phthalate	38.75	3,875	[7]	[8]
3,3-dichlorobenzidine	1.29	129	[7]	[8]
o-cresol	[6]	[6]	56	[8]
m-cresol	[6]	[6]	56	[8]
p-cresol	[6]	[6]	56	[8]
nitrobenzene	[6]	[6]	140	[8]
cresol-mixed isomers	[6]	[6]	112	[8]

Table 28 (cont.)
Preliminary Treatment Standards for Soils [1]

Constituent of Concern	Direct Contact 10-6 (HQ=1) (mg/kg) [2]	Direct Contact 10-4 (HQ=1) (mg/kg) [3]	LDR Soil Treatment Standard (mg/kg) [4]	SSLs for Ground Water Protection (mg/kg) [5]
	A	B	C	D
PCBs / Pesticides				
PCBs	0.3 [9]	5	[7]	[8]
aldrin	0.03 [9]	3	[7]	[8]
Inorganics				
antimony	55 [9]	55	[7]	[8]
arsenic	11.7 [10]	41	[7]	[8]
cadmium	229 [9]	229	[7]	[8]
chromium	920 [9]	920	[7]	[8]
lead	400 [11]	400 [11]	[7]	[8]
mercury	78 [9]	78	[7]	[8]
thallium	18	18	[7]	[8]
vanadium	1,446 [9]	1,446	[7]	[8]

[1] The preliminary treatment standard for each constituent of concern is the lowest standard given in columns A through D. Material which meets the preliminary treatment standard for the individual contaminants may not satisfy the treatment objectives specified in Section 8.0 of this ROD if multiple contaminants are presents. Therefore, the cumulative risks associated with direct contact with the treated material, and the use of ground water which may be impacted by the treated material, shall be calculated. If necessary, the soil and waste material shall be further treated in order to ensure that it meets the treatment objectives specified in this ROD.
[2] Site-specific treatment criteria to reduce the excess lifetime cancer risk associated with direct contact with soil to one in one million and to reduce the HI to 1.0; applies to material to be placed above the water table.
[3] Site-specific treatment criteria to reduce the excess lifetime cancer risk associated with direct contact with soil to one in ten thousand and to reduce the HI to 1.0; applies to material to be placed below the water table.
[4] RCRA Universal Treatment Standards for soils which would be placed on-site following ex situ treatment.
[5] Site-specific soil screening levels (SSLs) for ground water protection. The SSLwould meet the lower of the risk-based criteria for Upper Sand ground water, the MCL or a non-zero MCLG.
[6] Not a constituent of concern for direct contact exposure.
[7] No Univeral Treatment Standard (UTS) established for this compound or treated material is not subject to UTS for this constituent.
[8] Not a constituent of concern to ground water at the Site.
[9] Treated soil or sediment containing this constituent at levels above the concentration given in column A will require off-site treatment and/or disposal.
[10] Based on Site-specific background concentration (95% upper confidence limit on the mean). See Appendix B of Focused Feasibility Study.
[11] EPA OSWER Directive 9200.4-27P ("Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," August 1988) establishes a standard of 400 mg/kg for lead in soil on residential properties.

Table 28.a
MCLs and Non-zero MCLGs Which are Performance Standards

Contaminant of Concern	MCL (mg/L)	Non-zero MCLG (mg/L)
Arsenic	0.010	-[1]
Benzene	0.005	-
Chlorobenzene	0.1	0.1
1,4-Dichlorobenzene	0.075	0.075
1,2-Dichloroethane	0.005	-
1,1-Dichloroethene	0.007	0.007
cis-1,2-Dichloroethene	0.07	0.07
Methylene Chloride	0.005	-
Toluene	1	1
Tetrachloroethene	0.005	-
1,1,1-Trichloroethane	0.2	0.20
Trichloroethene	0.002	-
Vinyl Chloride	0.002	-

[1] "-" denotes that there is no non-zero MCLG for this chemical.

Table 29
Applicable or Relevant and Appropriate Requirements (ARARs) and Policies To Be Considered (TBCs)
Maryland Sand, Gravel and Stone Superfund Site, Operable Unit Three

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Clean Water Act: Federal Ambient Water Quality Criteria for the Protection of Aquatic Life	33 U.S.C. § 1314	Relevant and Appropriate	These are non-enforceable guidelines established pursuant to Section 304 of the Clean Water Act that set the concentrations of pollutants which are considered adequate to protect human health based on water and fish ingestion and to protect aquatic life. Federal ambient water quality criteria may be relevant and appropriate to CERCLA cleanups based on the uses of a water body.	The designated uses for Mill Creek and the wetlands at the Site include water contact recreation, fishing, protection of aquatic life and wildlife, and public water supply. Those Federal ambient water quality criteria which deal with fish ingestion and protection of aquatic life are relevant and appropriate to the Creek and the wetlands unless a State water quality standard exists for that particular pollutant
Maryland - Water Pollution: Water Quality		Applicable	These are criteria to maintain surface water quality.	Mill Creek is a surface water of the State of Maryland and, pursuant to COMAR 26.08.02.08G(1)(c), it is designated for Use I-P. Therefore, all criteria applicable to a discharge to a Use I-P surface water must be met by any point source discharges from the project.
Designated Uses (stream classification)	COMAR 26.08.02.02		Defines designated uses.	
Surface Water Quality Criteria	COMAR 26.08.02.03		Provide qualitative criteria for discharges to surface waters.	Any point source discharge shall meet the surface water quality criteria for fresh water streams and rivers and the general water quality criteria.
Toxic Substance Water Quality Criteria for Surface Waters	COMARs 26.08.02.03-1A and B		Establishes toxic substance criteria and boundaries for fresh water, estuarine and salt water boundaries.	Mill Creek and its tributaries are within a fresh water boundary.
Numerical Criteria for Toxic Substances in Surface Waters	COMARs 26.08.02.03-2A - I		Discusses numerical criteria and the opportunity to develop site-specific criteria	Specific criteria for listed substances must be met for any point source discharge
Water Quality Criteria Specific to Designated Uses	COMAR 26.08.02.03-3B		Requires that water designated for certain uses meet certain criteria.	Discharge from any point source must not result in exceedance in surface water of criteria designated for I-P use.
Surface Water Mixing Zones	COMAR 26.08.02.05		Describes how mixing zones can be used in calculating discharge concentrations.	The allowable mass rate and concentration of any point source discharged will take into account the mixing zone requirements allowable under the regulation.
Surface Water Use Designation	COMAR 26.08.02.07		Requires that the surface water be protected according to its designated use. Mill Creek is designated for Use I-P (Water Contact Recreation, Protection of Aquatic Life and Public Water Supply).	Any discharge concentrations and mass loadings shall protect Mill Creek for Use I-P designated uses.

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Maryland - Water Pollution: Discharge Limitations		Applicable		
Effluent Limitations	COMAR 26.08.03.01		Describes which discharges are permitted and which are not, and sets standards for allowable discharges.	The substantive standards of these requirements shall be met by any point source discharge.
Control of the Discharge of Toxic Substances to Surface Waters	COMAR 26.08.03.07		Describes when discharges must be monitored and when the State may "grant a temporary modification from one or more effluent limitations based on water quality criteria for toxic substances."	Any point source discharges will be monitored for biotoxicity unless EPA determines at a future date that this is not necessary to protect the environment.
Maryland - Water Pollution: Permits		Applicable		
Discharge Permit Limits	COMARs 26.08.04.02-1A and D		Describes general types of conditions to be included in a permit and describes mixing zone calculations.	Any point source discharge shall meet all substantive criteria, but no permit will be required.
Monitoring	COMAR 26.08.04.03A		An authorized discharge shall be subject to any monitoring requirements deemed necessary.	EPA will determine appropriate monitoring requirements for any point source discharge based on all available information.
Maryland - Nontidal Wetlands: General and Permit Application and Processing		Applicable	Provides criteria for the following activities if undertaken in a nontidal wetland or its buffer zone: (i) removal, excavation or dredging of any materials, (ii) changing existing drainage characteristics, sedimentation patterns, flow patterns, or flood retention characteristics, (iii) disturbance of the water level or water table by drainage, impoundment or other means, (iv) dumping, discharging of, or filling with material, or placing of obstructions, (v) grading or removal of material that would alter existing topography, or (vi) destruction or removal of plant life that would alter the character of a nontidal wetland	There are nontidal wetlands at the Site. Any activities in these wetlands or their buffer zone that involve the following must comply with the substantive standards of these regulations: (i) removal, excavation or dredging of any materials, (ii) changing existing drainage characteristics, sedimentation patterns, flow patterns, or flood retention characteristics, (iii) disturbance of the water level or water table by drainage, impoundment or other means, (iv) dumping, discharging of, or filling with material, or placing of obstructions, (v) grading or removal of material that would alter existing topography, or (vi) destruction or removal of plant life that would alter the character of a nontidal wetland.
Definitions	COMAR 26.23.01.01			
Activities Exempt from Permit Requirements	COMAR 26.23.01.02			
Expanded Buffer	COMAR 26.23.01.04		Describes the size of the wetland buffer.	Any areas with steep sides shall have a 100-foot buffer.
Criteria for Review of Nontidal Wetland Permit Applications	COMAR 26.23.02.04		Describes how the State reviews nontidal wetland permits.	All substantive criteria shall be complied with, but no permit will be obtained.

	ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
	Water Quality and Water Management Plans	COMAR 26.23.02.06		Subsection 26.23.02.06A provides substantive criteria for meeting Section 26.23.02.04A(3)'s requirement that a regulated activity cannot degrade State waters. Subsection 26.23.02.06B requires any regulated activity to be consistent with any approved comprehensive watershed management plan.	The substantive criteria shall be met.
	Maryland - Nontidal Wetlands: Mitigation		Applicable		The substantive standards of this regulation are applicable to all Site activities that could affect wetlands.
	Mitigation for Regulated Activities	COMAR 26.23.04.02		States that all necessary steps shall be taken to first avoid adverse impacts and then minimize losses of nontidal wetlands. If losses are not avoidable, mitigation is required.	
	Mitigation Standards	COMAR 26.23.04.03		Require a minimum replacement ratio of 1:1 on an acreage basis plus additional replacement for lost value.	
	Endangered Species Act of 1978	16 U.S.C. § 1531 et seq.	Applicable	Requires federal agencies to ensure that any action authorized by an agency is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.	The federally threatened bog turtle (*Clemmys muhlenbergii*) may be present within the project area. A survey for bog turtle habitat and bog turtles may be appropriate.
	Federal Regulation of Activities in or Affecting Wetlands	40 CFR 6.302(a) and 40 CFR Part 6, Appendix A	To Be Considered	Sets forth EPA requirements for carrying out provisions of Executive Order 11990 (Protection of Wetlands). No activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available. If there is no other practicable alternative, impacts must be minimized and/or mitigated.	The substantive standards of this regulation are applicable to all Site activities that could affect wetlands. EPA has determined that there is no practicable alternative that has less effect.
	Coastal Zone Management Act of 1972; Coastal Zone Act Reauthorization Amendments of 1990	16 U.S.C. 1451 *et seq.* 15 CFR 930.17, 20, 31-33, 37(a), 39(b-d)	Applicable	Requires that Federal agencies conducting or supporting activities directly affecting the coastal zone, conduct or support those activities in a manner that is consistent with the approved appropriate State coastal zone management program.	The Site is within the coastal zone. The project will be conducted in a manner that is consistent with the approved Maryland coastal zone management program, to the maximum extent practicable, but no procedural requirements in the regulations must be followed.
	Council on Environmental Quality	40 CFR 1500.2(f)	Relevant and Appropriate	Requires use of all practicable means, consistent with the requirements of NEPA, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects upon the quality of the human environment.	

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Maryland - Occupational, Industrial and Residential Hazards: Control of Noise Pollution		Applicable	Provides limits on noise levels for the protection of human health and welfare and exemptions to those limits, and specifies standards to be met by sound level meters to be used to determine compliance.	Substantive standards of these regulations shall be met by the remedial action, unless the activity in question is subject to an exemption under COMAR 26.02.03.03 B(2).
Definitions	COMAR 26.02.03.01			
General Regulations	COMARs 26.02.03.03A, B(2), D(2) and D(3)			
Clean Water Act (CWA); National Pollutant Discharge Elimination System Requirements	33 U.S.C. § 1251 et seq.	Applicable	Enforceable standards for all point source discharges to waters of the United States.	Discharge limits shall be met by any point source discharge from the construction zone. Only substantive requirements shall be met and no permit shall be obtained. A stormwater management plan, subject to EPA approval, is required for this project.
Scope of the NPDES Permit Requirement	40 CFR 122.1(b)(1)			
Definitions	40 CFR 122.2			
Storm Water Discharges (Applicable to State NPDES Program)	40 CFR 122.26(b)(14) and (b)(15)			
New Sources and New Dischargers	40 CFR 122.29			
Permit Conditions	40 CFR 122.41(a), (d), (e), (j)(1), and (m)(1) and (4); 40 CFR 122.44-45; 40 CFR 125.1-3; and 40 CFR 125.100-104			
Maryland - Water Management: Stormwater Management		Applicable	Requires stormwater management plan and contains minimum requirements for the control of stormwater, to be included in ordinances to be adopted by local government bodies. Provides for specific minimum control requirements for stormwater management Describes specific stormwater management design criteria	The substantive standards of these requirements are applicable to the remedial activities at the Site, unless such activity is exempted under COMAR 26.17.02.05 B. No permit shall be required. A stormwater management plan, subject to EPA approval, is required for this project.
Definitions	COMAR 26.17.02.02			
When Stormwater Management is Required	COMARs 26.17.02.05A and B			
Minimum Control Requirements	COMARs 26.17.02.06A(3), A(4) and B			
Stormwater Management Measures	COMAR 26.17.02.08			
Stormwater Management Plans	COMAR 26.17.02.09B		Requires stormwater management plan to be consistent with watershed management plans or flood management plans.	Substantive standards apply.

	ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
	Maryland - Waterworks and Waste System Operators: General Regulations		Applicable		
	Definitions	COMAR 26.06.01.01			
	Certification	COMAR 26.06.01.05		Prohibits a person from practicing as an operator or superintendent of a wastewater treatment plant unless that person has appropriate certification.	Applies to operation of wastewater treatment plant.
	Maryland - Board of Well Drillers: General Regulations		Applicable		
	Definitions	COMAR 26.05.01.01			
	Prohibitions	COMAR 26.05.01.02		Prohibits well drilling by any person without a license, unless an exception in subsection B applies	Applies to all well drilling during response action.
	Maryland - Regulations of Water Supply, Sewage Disposal, and Solid Waste: Well Construction		Applicable		
	Definitions	COMAR 26.04.04.02			
	Construction Standards	COMARs 26.04.04.07A, B, D - L, M(6) and O		Contains specific standards for construction of wells.	For extraction wells, the substantive standards of COMAR 26.04.04.07A, B, D through L and O are applicable. For monitoring wells, COMAR 26.04.04.07.M (6)and O are applicable; EPA shall specify construction standards for observation wells (i.e., monitoring wells).
	Abandonment Standards	COMAR 26.04.04.11		Contains specific standards for well abandonment.	Substantive standards are applicable to extraction and monitoring wells; this specifically excludes 26.04.04.11D(6), which is procedural.
	Maryland - Water Management: Erosion and Sediment Control		Applicable	Requires preparation of an erosion and sediment control plan for activities involving land clearing, grading and other earth disturbances and establishes erosion and sediment control criteria.	The substantive standards of these regulations shall apply to clearing, grading, and excavation activities at the Site. No permit will be required.
	Definitions	COMAR 26.17.01.01			
	Activities for Which Approved Erosion and Sediment Control Plans are Required	COMARs 26.17.01.05A and B			
	Application for Approval of Erosion and Sediment Control Plans	COMAR 26.17.01.07B			

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Approval or Denial of Erosion and Sediment Control Plans	COMARs 26.17.01.08A and B			
Maryland - Water Management: Water Appropriation or Use			Establishes criteria and terms for persons appropriating or using water.	The substantive standards of these regulations would apply to the extraction of ground water. No permit will be required..
Definitions	COMAR 26.17.06.01			
Scope and Applicability	COMAR 26.17.06.03			
Criteria for Approval of Water Appropriation or Use Permits	COMAR 26.17.06.05			
Toxic Substances Control Act				
Polychlorinated Biphenyls (PCBs) Manufacturing Process, Distribution in Commerce, and Use Prohibitions	40 CFR Part 761	Applicable	Requirements for handling and disposal of PCB-contaminated materials with concentrations of PCB greater than 50 ppm.	Applies to handling and disposal of any material contaminated with PCBs at greater than 50 ppm.
Underground Injection Control Program	40 CFR Part 144	Applicable	Prohibits underground injection unless requirements are met.	Alternatives 3a, 3b, 3c and 4b involve injection of substances into the subsurface; any such injection shall be in accordance with the substantive standards of these requirements
Maryland - Air Quality: General Emission Standards, Prohibitions		Applicable	Provides air quality standards, general emission standards and restrictions for air emissions from articles, machine, equipment, etc. capable of generating, causing, or reducing emissions.	Any equipment or construction capable of generating, causing or reducing emissions shall meet these substantive requirements. No permit shall be required. All alternatives except Alternative 1 involve excavation, which would have to meet these substantive requirements. The air stripper (Alternatives 2 through 5) would have to meet these requirements. The thermal desorption unit (Alternatives 3a, 3c, 4a and 5) would have to meet these requirements. Alternatives 3b and 4b would have to meet this requirement for in-situ thermal treatment.
Definitions	COMAR 26.11.06.01			
Visible Emissions	COMAR 26.11.06.02			
Particulate	COMAR 26.11.06.03			
Volatile Organic Compounds	COMAR 26.11.06.06			
Nuisance	COMAR 26.11.06.08			
Odors	COMAR 26.11.06.09			

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Maryland - Air Quality: Toxic Air Pollutants		Applicable	Requires emissions of Toxic Air Pollutants ("TAPs") from new and existing sources to be quantified (also describes methods of quantification); establishes ambient air quality standards and emission limitations for TAP emissions from new sources; requires best available control technology for toxics for new sources of TAPs.	All alternatives except Alternative 1 involve excavation, which would have to meet these substantive requirements.. The air stripper (Alternatives 2 through 5) would have to meet these requirements. The thermal desorption unit (Alternatives 3a, 3c, 4a and 5) would have to meet these requirements. Alternatives 3b and 4b would have to meet this requirement for in-situ thermal treatment.
Definitions	COMAR 26.11.15.01			
Applicability and Exemptions	COMAR 26.11.15.03			
Requirements to Quantify Emissions	COMARs 26.11.15.04 A and C			
Control Technology Requirements	COMAR 26.11.15.05			
Ambient Impact Requirements	COMAR 26.11.15.06			
Demonstrating Compliance with Regulation .06	COMAR 26.11.15.07			
Maryland - Air Quality: Procedures Related to Requirements for Toxic Air Pollutants		Applicable	Contains additional substantive requirements related to Toxic Air Pollutants.	All alternatives except Alternative 1 involve excavation, which would have to meet these substantive requirements.. The air stripper (Alternatives 2 through 5) would have to meet these requirements. The thermal desorption unit (Alternatives 3a, 3c, 4a and 5) would have to meet these requirements. Alternatives 3b and 4b would have to meet this requirement for in-situ thermal treatment.
Demonstrating Compliance with COMAR 26.11.15.06	COMAR 26.11.16.02			
Screening Levels	COMAR 26.11.16.03			
Procedures for Requesting Special Permits	COMAR 26.11.16.05			
Class I Toxic Air Pollutants	COMAR 26.11.16.06			
Levels Used to Review Ambient Impacts	COMAR 26.11.16.09			
Control of Air Emissions from Air Strippers at Superfund Groundwater Sites	OSWER Directive 9355.0-28, June 15, 1989	To Be Considered	This policy guides the decision of whether additional controls (beyond those required by statute or regulation) are needed for air strippers at groundwater sites.	This policy would be considered in determining the necessary emission controls. Sources most in need of additional controls are those with emissions rates in excess of 3 lbs./hour or a potential rate of 10 tons/year of total VOCs.
Maryland - Disposal of Controlled Hazardous Substances				
Definitions	COMAR 26.13.01.03	Applicable	Provides definitions for when hazardous waste management requirements are triggered.	

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Identification and Listing of Hazardous Waste	COMARs 26.13.02.01 - .06 and COMARs 26.13.02.15A, and .16 - .19	Applicable	Contains criteria and lists for identifying listed wastes.	Most of the contaminated materials at this Site contain listed hazardous wastes.
Standards Applicable to Generators of Hazardous Waste	COMARs 26.13.03.01B(1) and (6), COMAR 26.13.03.02B, and COMAR 26.13.03.05 E	Applicable		Hazardous wastes shall be managed (while on-site) in accordance with the substantive standards in COMAR 26.13.03.05 E.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (Containers, Tanks, Surface Impoundments and Waste Piles)	COMAR 26.13.05.01A(2), COMAR 26.13.05.09, COMAR 26.13.05.10-1, COMAR 26.13.05.10-3, COMARs 26.13.05.10-4A(1), B, C and D, COMARs 26.13.05.10-6A(1)-(5), (7) and (8), COMAR 26.13.05.10-7A, COMAR 26.13.05.11 (except 26.13.05.11G(1)(e)) and COMAR 26.13.05.12	Applicable		Standards for specific types of hazardous waste treatment, storage and disposal units.
Requirements for Landfills	COMARs 26.13.05.14.J(1)(a) - (d), (2)(a) - (d), provided, however, that the cross-reference to "all post-closure requirements, contained in Regulation .07G - J" found in COMAR 26.13.05.14J(2) shall not be read to require compliance with any additional requirements not specifically listed here	Relevant and Appropriate	Apply to owners and operators of facilities that dispose of hazardous waste in landfills.	EPA has determined that these specific requirements are relevant and appropriate for the cap required in Alternatives 2, 4a and 4b only.
Requirements for Thermal Destruction of Hazardous Waste	COMARs 26.13.05.16A, B(1) - and B(4) (except that the cross-reference in B(4) to COMAR 26.13.07.17 shall be limited to the substantive portions of that regulation), and COMARs 26.13.05.16.C - L, except that, for purposes of this ARAR, the requirement to obtain a permit and other procedural requirements are omitted	Applicable	Requirements for thermal destruction of hazardous waste	These requirements shall be met for Alternatives 3a, 3c, 4a and 5 if the treatment of soils in the low-temperature thermal desorption (LTTD) unit or the off-gas treatment for that unit involves thermal destruction of hazardous waste.

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Requirements for Miscellaneous Units	COMARs 26.13.05.16-1A, B(1) and B(2) (except that no permit shall be required and the cross-reference in B(2)(d) shall be limited, for purposes of this ARAR identification, to COMAR 26.13.05.16 and the substantive portions of 26.13.07.07), COMAR 26.13.05.16-1B(3), and the substantive portions of COMAR 26.13.05.16-1C	Applicable	Apply to owners and operators of facilities that treat, store or dispose of hazardous waste in miscellaneous units	These requirements shall be met for Alternatives 3a, 3c, 4a and 5.
Resource Conservation and Recovery Act of 1976; Hazardous and Solid Waste Amendments of 1984	42 U.S.C.§ 5901 et seq.	Applicable	Regulates the management of hazardous waste, to ensure the safe disposal of wastes, and to provide for resource recovery from the environment by controlling hazardous wastes "from cradle to grave."	
Hazardous Waste Management System: General Definitions	40 CFR 260.10 (Subpart B)	Applicable	Provides definitions for when hazardous waste management requirements are triggered.	
Identification and Listing of Hazardous Wastes	40 CFR Part 261	Applicable	Contains criteria and lists for identifying characteristic and listed wastes.	Use to determine if any materials handled during the removal action (for example, the extracted ground water, ground water treatment waste, and excavated soils) are defined as hazardous waste, thus triggering on-site treatment, storage and disposal requirements.
Standards Applicable to Generators of Hazardous Waste	40 CFR 262.11	Applicable	Establishes standards for generators of hazardous wastes.	Requires the determination of material as hazardous or non-hazardous prior to on-site treatment, storage or disposal.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs)	40 CFR Part 264	Applicable	Regulations for owners and operators of TSDFs which define acceptable management of hazardous wastes.	Only those applicable federal requirements that are not part of Maryland's authorized State RCRA program.
General Facility Standards (Subpart B)	40 CFR 264.10-19			
Preparedness and Prevention (Subpart C)	40 CFR 264.30-37			
Contingency Plan and Emergency Procedures (Subpart D)	40 CFR 264.50-56			
Use and Management of Containers (Subpart I)	40 CFR 264.170-179			

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Tank Systems (Subpart J)	40 CFR 264.190-200; only applicable for on-site treatment systems and temporary storage tanks containing hazardous wastes.			
Surface Impoundments (Subpart K)	40 CFR 264.220-223 and 40 CFR 264.226-230			
Waste Piles (Subpart L)	40 CFR 264.250-254 and 40 CFR 264.256-259			
Air Emission Standards for Process Vents (Subpart AA)	40 CFR 264.1030-1036			
Air Emission Standards for Equipment Leaks (Subpart BB)	40 CFR 264.1050-1063			
Air Emission Standards for Tanks, Surface Impoundments, and Containers (Subpart CC)	40 CFR 264.1080-1088			
Containment Buildings (Subpart DD)	40 CFR 264.1100-1102			
Landfills (Subpart N)	40 CFR 264.300-317	Relevant and Appropriate	Contains requirements for landfill cap.	Only those cap requirements which are more stringent than cap requirements for a hazardous waste landfill under Maryland's authorized RCRA program. Pertains to Alternatives 2, 4a and 4b which include a cap.
RCRA Land Disposal Restrictions	40 CFR Part 268 268.9 - General (Subpart A) 268.30-39 - Prohibition on Land Disposal (Subpart C) 268.40-49 - Treatment Standards (Subpart D) 268.50 - Prohibition on Storage (Subpart E)	Applicable	Restrictions on land disposal of hazardous waste.	Under Alternatives 3a, 3c, 4a and 5, treatment would be required prior to placement of soils that are contaminated with hazardous waste.

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Specification and/or Details Regarding ARARs in the Context of this Remedial Project
Safe Drinking Water Act	42 U.S.C. §§ 300f et seq.			
Maximum Contaminant Levels (MCLs)	40 C.F.R §§ 141.11-.12 and 141.61-.62	Relevant and Appropriate	MCLs are enforceable standards for public drinking water supply systems which have at least 15 service connections or are used by at least 25 persons. These requirements are not directly applicable since ground water at the Site is used as a private drinking water supply. However, under the circumstances of this Site, MCLs are relevant and appropriate requirements.	The NCP requires that remedial actions for ground water that is a current or potential source of drinking water shall meet the MCL for each site-related contaminant if the Maximum Contaminant Level Goal (MCLG) for that contaminant is set at a level of zero and MCLs are relevant and appropriate under the circumstances of the site. In addition, the discharge of treated ground water to the on-site stream shall not result in an exceedance of MCLs in the waters of the stream.
Maximum Contaminant Level Goals (MCLGs)	40 C.F.R § 141.50-.51	Relevant and Appropriate	MCLGs are non-enforceable health goals for public water supplies which have at least 15 service connections or are used by at least 25 persons. Under the circumstances of this Site, MCLGs are relevant and appropriate requirements.	The NCP requires that remedial actions for ground water that is a current or potential source of drinking water shall meet non-zero MCLGs for contaminants of concern for which they exist, where they are relevant and appropriate requirements. In addition, the discharge of treated ground water to the on-site stream shall not result in an exceedance of non-zero MCLGs in the waters of the stream.

Table 30
Alternative 3a (Without Enclosure)
Ex-Situ Treatment of Ground Water Principal Threat Soil (by LTTD),
Enhanced Biodegradation of Low-Level Threat Soil,
and Expansion and Operation of the Ground Water Treatment System
Maryland Sand, Gravel and Stone Site
Elkton, Maryland

Item Description	Quantity	Unit	Unit Cost	Item Cost
Erosion & Sedimentation Controls	1	lump	$30,000	$30,000
Site Preparation/Clearing	3.0	acre	$6,000	$18,000
Site Fencing/Security	1	lump	$15,000	$15,000
Special Material Excavation and Off-Site Disposal [1]	1,000	cy	$850	$850,000
				$913,000
Excavation/On-Site Thermal Desorption of Principal Threat				
LTTD Mobilization/Demobilization	1	lump	$500,000	$500,000
Real-time Air Monitoring during excavation	1,000	hour	$100	$100,000
VOC/Dust Suppression Equipment	1	lump	$25,000	$25,000
Sheeting/Shoring for Ex. Below GWT	22,500	sf	$12	$270,000
Excavation Dewatering/Treat Water On-Site	1	lump	$25,000	$25,000
Soil Excavation/Processing	30,000	cy	$12	$360,000
Dewatering/Drying of Saturated Soils	7,000	cy	$16	$112,000
Post-Excavation Sampling/Analysis	1	lump	$100,000	$100,000
On-Site HTTD Treatment	3900	ton	$150	$585,000
On-Site LTTD Treatment	41,100	ton	$100	$4,110,000
Disposal of Desorbed/Condensed Residuals	1	lump	$100,000	$100,000
				$6,287,000
Backfill/Restore Excavated Areas				
Backfill Treated Soil	30,000	cy	$10	$300,000
18" Clean Fill	3,600	cy	$14	$50,400
6" Topsoil	1,200	cy	$18	$21,600
Mulching/Seeding	7,111	sy	$1.00	$7,111
				$379,111
Extend Groundwater Recovery Trench				
Trench Excavation (20' deep)	300	feet	$400	$120,000
Spoils Treatment	600	ton	$100	$60,000
Trench Backfilling/Restoration	400	cy	$50	$20,000
Piping, Sump, Pump, Controls	1	lump	$30,000	$30,000
				$230,000
Enhanced Bioremediation				
Substrate Injections (25 ft. centers) [2]	927	boring	$500	$463,500
Substrate Cost	102,000	gal	$3	$306,000
				$769,500
Direct Construction Total (DCT)				$8,578,600
Constuction Total				$8,578,600
Performance Test (Low Temperature Thermal Desorption)				$100,000
Performance Test (High Temperature Thermal Desorption)				$150,000
Remedial Design, Construction Oversight, & Project Management (19%) [3]				$1,629,934
Subtotal Construction Cost				$10,458,500
Contingency (35%)				$3,660,475
Total Capital Cost				$14,119,000
Total Present Worth O&M Cost				$8,394,500
Projected Opinion of Probable Cost [4]				$22,510,000

Table 30 (Continued)
O&M Costs
Alternative 3a
Ex-Situ Treatment of Ground Water Principal Threat Soil (by LTTD),
Enhanced Biodegradation of Low-Level Threat Soil,
and Expansion and Operation of the Ground Water Treatment System

Description	Unit Cost	Present Worth [5]
O&M/Sampling of Treatment Activities (Year 1-10)	$25,000	$193,000
O&M for Exist. GW System (Year 1-30)	$350,000	$4,343,000
O&M for Site Security (1st Phase - Year 1-5)	$130,000	$533,000
O&M for Site Security (2nd Phase - Year 5-30)	$30,000	$249,000
Upper Sands GW Monitoring (Year 1-30)	$60,000	$745,000
Middle Sands GW Monitoring (1st Phase - Year 1-10)	$60,000	$421,000
Middle Sands GW Monitoring (2nd Phase - Year 10-30)	$30,000	$162,000
EPA 5-Year Review (Year 5, 10, 15, 20, 25, 30)	$25,000	$69,600
Subtotal:		$6,715,600
25% Contingency		$1,678,900
Projected Opinion of Probable O&M Cost		$8,394,500

Notes:

1) Special Material includes material not amenable to treatment by the selected technology, including sediment from Pond 2 wet containing metals, pesticides, and PCBs;and rubbery, stringy material encountered in NDA.
2) 50% of area will be subject to retreatment.
3) Project Management (5%); Remedial Design (8%); Construction Management (6%) of DCT (EPA 540-R-00-002, July 2000)
4) Estimated costs are based on conceptual evaluation of the potential alternative, and are subject to change based on future investigations and evaluations.
5) A discount rate of 7% after inflation was assumed for the present worth analysis. (EPA 540-R-00-002, July 2000)

III. RESPONSIVENESS SUMMARY

MARYLAND SAND, GRAVEL AND STONE SITE
OPERABLE UNIT 3

ELKTON, CECIL COUNTY, MARYLAND

MARYLAND SAND, GRAVEL AND STONE SITE, OU3
ELKTON, CECIL COUNTY, MARYLAND

RESPONSIVENESS SUMMARY

This Responsiveness Summary documents public participation in the remedy selection process for OU3 of the Maryland Sand, Gravel and Stone Site. It contains a summary of the major comments received by EPA during the public comment period on the Proposed Plan for OU3 at the Site and EPA's responses to those comments.

A. Summary of Significant Comments from July 31, 2002 Public Meeting and EPA Responses

EPA held a public meeting near the Site on July 31, 2002 to accept public comment on EPA's Proposed Plan for OU3. The significant comments received regarding the plan are summarized here, along with EPA's responses thereto. In addition, many citizens who attended the meeting were seeking general information regarding the Site as a whole, and had specific questions regarding the selection and implementation of the OU2 remedy, particularly as it relates to the quality of ground water being used for drinking water in area homes. Because this Responsiveness Summary is a statutorily required document designed to meet the legal requirement that EPA summarize and respond to significant comments received regarding the Proposed Plan, EPA will only provide a brief overview of the comments related to the OU2 remedy issues and the Agency's response. The entire transcript of the meeting, including all comments received on any topic and EPA's response, is included in the publicly available portion of the Administrative Record for anyone who wants to view them, with the exception of some private information which was redacted from one commentor's comments. EPA is very appreciative of all the comments received and is very concerned regarding all of the issues raised by the public. Since the meeting, EPA has been working with MDE and the County Health Department, as well as numerous individual citizens who have contacted EPA directly after the meeting, to understand and address the issues raised. Further information regarding these issues is also provided in the Site Background Section and Community Acceptance Subsection of the ROD. These issues will be dealt with on an ongoing basis, but do not directly affect the decision EPA is making regarding the alternatives for OU3.

Concerns Raised Regarding the OU2 Remedy

Numerous commentors, many of whom were finding out about the existence of the Site for the first time, were concerned about whether the ground water in the immediate vicinity of the Property was adequately monitored and whether the OU2 remedy being implemented was sufficient to address the existing contamination. There were also concerns raised regarding possible health effects in the community, and whether sufficient data had been collected regarding health effects issues.

Response to Concerns Raised Regarding the OU2 Remedy

EPA explained that prior monitoring had indicated that contaminants were not present onsite at levels of concern in the ground water in the aquifers that supply most area residential wells (the Lower Sand and Bedrock aquifers). Also, monitoring of the Middle Sand aquifer has suggested that contamination in that aquifer does not extend substantially beyond the Site boundary.

Since the public meeting, EPA has requested that the potentially responsible parties ("PRPs") submit a workplan, pursuant to the OU2 remedy requirements, outlining steps to be taken to delineate further the contamination in the Middle Sand aquifer. Additionally, in September of 2002, EPA received from the County Health Department test results from water supply wells near the Property[1] showing that low levels of certain VOCs were present in 14 of the 47 samples analyzed. One such sample contained a level of chloroform that is above the level which requires action under the OU2 ROD if the contamination is Site-related. However, the source of this chloroform has not yet been determined. EPA will continue to address these concerns through the implementation of the OU2 ROD.

With respect to the concerns raised regarding health effects and health studies, EPA explained that the Agency for Toxic Substances and Disease Registry ("ATSDR") has primary jurisdiction over these issues at Superfund Sites. ATSDR did conduct a Public Health Assessment for this Site in 1994. Several commentors questioned whether this was adequate, given the timeframe for development of cancer in the human body. EPA referred these commentors to ATSDR.

Significant Comments Received Regarding the OU3 Proposed Plan

Comment: Many commentors raised concerns about why additional development was being permitted in the area of the Site and why potential homeowners were not informed of the existence of the Superfund Site in the area before purchasing their homes. Several specific concerns in this regard focused on EPA's response to a request from MDE to comment on a letter from the Cecil County Department of Planning, Zoning, Parks and Recreation concerning a proposed housing development in close proximity to the Site.

Response to Comment: EPA explained that local land use decisions are, for the most part, under the purview of local and/or state agencies. EPA is not in the possession of information at this time that would justify its seeking to restrict the use of the property at issue. EPA explained that OU2 includes a monitoring program and requires point-of-use treatment for area water supply wells affected by Site contamination. Additionally, as part of the implementation of the OU2 remedy, EPA had already determined that additional monitoring wells would be required should there be a substantial increase in water usage in the area. This measure was in large part a response to concerns raised by MDE in the context of the interagency discussion regarding the

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[1]When capitalized, Property means the land owned by the Maryland Sand, Gravel and Stone Company.

proposed development. See April 10, 2002 Letter to EPA from MDE and April 22, 2002 Letter to MDE from EPA.

Comment: If EPA chooses [Alternative] 5, what is the increase in levels to the surrounding public's health for the toxins that might be emitted into the air?

Response to Comment: Emissions controls would be installed to ensure that the emissions comply with all state air regulations and that there are no unacceptable risks to the community.

Comment: Will we be able to build on the Site at a future time?

Response to Comment: EPA intends to address hazardous substance issues to allow the Site to be used in accordance with local zoning and planning.

Comment: Where can we get the information presented tonight? Can we get a copy of the transcript for this hearing? Where can people obtain more information regarding the Site.

Response to Comment: Information is available through the internet at www.epa.gov/araweb. The transcript will be included in the Administrative Record and a Responsiveness Summary will be prepared summarizing the significant comments and the responses thereto.

Comment: What contractor will handle the cleanup?

Response to Comment: That has not been determined at this time. If the PRPs perform the cleanup, they will submit the names and qualifications of proposed contractors to EPA for acceptance. If EPA performs the cleanup, the Agency will take into consideration several factors, such as conflict of interest, when selecting a contractor.

Comment: Levels that are considered acceptable levels now, may not be acceptable ten years from now, so the Site should be thoroughly cleaned up to the point where that if we wanted to build in that area, that it would be acceptable to build on, that the land is clean for everyone now and in the future.

Response to Comment: EPA is assuming a residential future use scenario, which means the land will be available in the future for unrestricted use in accordance with local zoning and planning.

Comment: What about unacceptable surface water risks?

Response to Comment: The unacceptable surface water risks referred to were onsite seeps. Ground water recovery trenches were installed and those seeps have dried up.

Comment: Should anyone who has been walking with a child in the swampy area be concerned?

Response to Comment: The swampy area [near the discharge from the ground water treatment plant] was tested and there was no unacceptable risk.

B. Comments from a Local Resident

As with the comments from the public meeting, this Responsiveness Summary focuses on comments received from a local resident during the public comment period that are significant and that deal with OU3. The full text of the resident's comments is included in the publicly available portion of the Administrative Record, with the exception of some private information which was redacted and included in a confidential section of the Administrative Record.

Comment: The commentor recommends testing all residential wells or water sources within a one-mile radius of the Site on a regular basis.

Response to Comment: EPA believes that the testing that was done during the RI/FS for OU3 adequately supports the Agency's decision regarding the remedial action selection for OU3. EPA may require more testing related to the implementation of OU2; this decision will be based on a scientific analysis of the information available.

Comment: The commentor recommends a ban on further development in the area, until a complete study is done to assess the possible effects and/or impact of existing/planned decontamination efforts.

Response to Comment: EPA believes that the studies done to date are sufficient to support EPA's remedy decisions. See, also, the response to the first Significant Comment Received Regarding the OU3 Proposed Plan.

Comment: The commentor inquired if there are still ponds on the Site and if they were going to be drained or treated and refilled?

Response to Comment: There are three depressional areas on-site which contain water on a seasonal basis and have been referred to as ponds. Only one of these areas, known as Pond 2 Wet, presents unacceptable risks due to contamination. Surface soil and sediment in Pond 2 Wet presents unacceptable risks to Site trespassers and wildlife and would be excavated and properly disposed of off-site under EPA's preferred cleanup plan. The depressions in the earth which allow accumulation of water may no longer exist following cleanup due to regrading and the placement of topsoil to encourage revegetation of the Site. There is also a ponded wetland located along the western tributary of Mill Creek within and adjacent to the perimeter fence at the southern portion of the Eastern Excavation Area. Ground water which has been treated to remove contaminants is discharged to the ponded wetland. There are no contaminants at levels

of concern in this area of the Site. The ponded wetland would not be disturbed by the Operable Unit 3 cleanup activities.

Comment: The commentor inquired how far down the soil would be excavated in Alternatives 3a and 5?

Response to Comment: Excavation would continue until sampling indicated that all of the soil containing contaminants above the action levels had been addressed. Excavation down to the clay later (to depths of 20 feet or greater) may be required in areas of the Site.

Comment: The commentor inquired what is going to be done by EPA to inform the local residents of the status of cleanup and progress or problems.

Response to Comment: Until July 2002, it had been several years since EPA sent a fact sheet out to the community. The Agency intends to improve on that record and will be increasing outreach efforts via more frequent fact sheets.

Comment: The commentor observed that there is a stream and large, swampy area adjacent to the Site and that adequate measures to prevent access to this area do not appear to exist.

Response to Comment: Surface water and sediment in the stream (the western unnamed tributary to Mill Creek), and the ponded wetland located in the southern portion of the Eastern Excavation Area, immediately within the fence, have been tested and found not to pose unacceptable risks to human health. With the exception of the stream samples, samples have not been collected from the swampy area located outside the fence, south of the Eastern Excavation Area because EPA does not expect contaminants to be present in this area at levels of concern.

Comment: The commentor questioned why his family was not informed when they purchased their home a year ago that their property is located next to a toxic waste dump, and inquired whether there were mandatory disclosure requirements.

Response to Comment: These matters are generally dealt with by state law.

EPA believes that the questions from this commentor's August 6, 2002 e-mail are relevant to OU2, rather than OU3, and is not summarizing them here. However, they are included in the Administrative Record, along with EPA's responses.

C. Comments from the State on the Final Draft Proposed Plan

Comment: MDE noted that EPA's *Innovative Site Remediation Technology Design Application, Volume 5: Thermal Desorption* gives temperature ranges for low, medium and high temperature thermal desorption that differ from the ranges for low and high temperature thermal desorption given in the glossary of the Proposed Plan.

Response to Comment: The temperature ranges in the Proposed Plan were obtained from EPA's *Remediation Technologies Screening Matrix Reference Guide*, EPA/542/B-94/013, October 1994.

Comment: MDE provided alternative citations for numerous ARARs.

Response to Comment: In the ROD, EPA substituted the alternative citation provided by the State, when appropriate.

D. Comments from The Settling Group of Potentially Responsible Parties, submitted by Clean Sites Environmental Services, Inc.

Comment 1: While the Settlors believe that Alternative 3a is not without merit, they believe that Alternative 2 is the most cost-effective remedy for OU3. This alternative is protective of human health and the environment and complies with the ARARs identified by EPA for the Site, meeting the NCP's 'Threshold Criteria' for selection. In addition, the PRPs believe that Alternative 2 provides the most efficient balancing of the remaining selection criteria. Specifically, Alternative 2 has the lowest short-term risks and the most immediate reduction in risks. With $9 million less in cost, Alternative 2 permanently restricts only 18 acres of the 153 acres from intrusive future uses. The $9 million additional cost to implement Alternative 3a works out to $500,000 more per acre which is 50 to 100 times more than the fair market value for 18 acres of undeveloped property in the vicinity. Because the contamination is limited to a relatively small area in one portion of the Site, Alternative 2 would not preclude or be inconsistent with any of the potential land uses that would be desirable to the community, including but not limited to recreation, green space and development uses.

Response to Comment 1: EPA has carefully considered these points. As detailed in the Proposed Plan and again in the ROD, EPA considers Alternative 3a to represent a better balance of the nine criteria than Alternative 2. Alternative 3a would utilize permanent solutions to the maximum extent practicable, and Alternative 2 would not. EPA does not agree that Alternative 2 would result in more immediate reduction in risk. Alternative 3a, which removes the source material, would result in a greater risk reduction on both the short and long term. Finally, Alternative 2 would require that some portions of the Site be permanently excluded from residential and other development uses.

Comment 2: On page 4 of the Proposed Plan the following statement is incorrect: "As required by the 1992 Amendment, the settling PRPs initiated the recovery and treatment of contaminated ground water in the Middle Sand aquifer in 1998 after it was determined that the contaminant concentrations in the ground water exceeded the action levels specified in the OU2 ROD." For the record, the initiation of recovery and treatment of contaminated ground water in the Middle Sand aquifer in 1998 was part of the implementation of the OU1 design.

Response to Comment 2: The 1992 Amendment to the Consent Decree is the legal document

which required the Settling Potentially Responsible Parties to implement the OU2 ROD. The initiation of recovery and treatment of contaminated ground water in the Middle Sand aquifer was included in the remedy selected in the OU2 ROD.

Comment 3: For each alternative, EPA added costs in addition to the estimates provided in the *Focused Feasibility Study* for sampling to ensure that all soil that contains contaminants at concentrations which exceed the action levels is addressed. The cost for additional sampling should be determined based on a focused work plan to be developed as a pre-design study during the implementation of OU3.

Response to Comment 3: The actual cost for the additional sampling will be developed during implementation of the remedy. However, for purposes of considering the criterion of cost in choosing among the alternatives, and to make a clear record of what information EPA considered when selecting the remedy, EPA provided a reasonable estimate of these anticipated costs, based on best professional judgment.

Comment 4: The Proposed Plan categorizes the soil to be treated as a listed hazardous waste under RCRA. We believe that this is not required, will not add to the protectiveness of the remedy, and will add unnecessary administrative costs to the remedy and potential future users of the property. In fact, there is Region 3 precedent for not designating contaminated soils as listed hazardous waste - - the H & H Burn Pit Site. The H & H Burn Pit Site operated several years later in time than the Maryland Sand and Gravelstone Company waste disposal operations, but EPA concludes that the protectiveness of the remedy was not compromised by its decision not to designate the soil as a listed hazardous waste. The same is true here, in fact, the soil will not be handled differently than if it were considered listed waste. The NCP explains how EPA should determine when waste at a CERCLA site is a listed RCRA hazardous waste. It notes that it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the EPA may assume it is not a listed waste. Given the following factors, we believe EPA should determine that the soils are not listed wastes:

i precedent established by Region 3 for the H & H Burn Pit Site;
ii the disposal prior to existence of RCRA;
iii the involvement by the State of Maryland in ordering the burial of waste in an engineered clay lined pit;
iv the lack of contemporaneous documentation in the Administrative Record; and
v the considerable uncertainty concerning other sources of waste.

Response to Comment 4: Given the amount of waste that came to the Site from the Spectron, Inc. Site and the nature of the waste disposed of at the Spectron, Inc. Site over time, EPA has determined that much of the waste at the Site is RCRA listed hazardous waste. The Administrative Record does contain documentation supporting this determination. See, for instance, the documents attached to this Responsiveness Summary, which were included in the Administrative Record at the time of the public comment period. Thus, in instances where the waste is being actively handled as part of the remedy, RCRA is applicable (making irrelevant, for

purposes of the discussion regarding EPA's determination that RCRA listed wastes are in the soil and ground water at the Site, these commentors' statement that the disposal occurred prior to the existence of RCRA.) The NCP makes clear that determinations in this regard are to be made on a Site-specific basis. These commentors state that EPA did not make this same determination at the H & H Burn Pit Site and point out that that site operated several years later in time than this Site. However, EPA does not believe that this factor (which site operated first in time) is as relevant as the documentation available regarding the likely source of the waste. In that regard, EPA does not agree that there is "considerable uncertainty" concerning other sources of waste; rather, after approximately twenty years of enforcement history with this Site, including a relevant court ruling, the Agency would characterize the state of knowledge with respect to the contamination as "reasonably certain." Nor does EPA believe that the involvement or noninvolvement of the State in the initial disposal decision is relevant to the determination at issue in this comment, which is solely whether or not EPA has correctly exercised its discretion, based on the entire Administrative Record, by determining that the Site contains listed hazardous wastes. Furthermore, EPA does not believe that this determination adds unnecessary administrative costs because of the Agency's determination that, in instances where RCRA is not directly applicable (i.e., for the capping requirements of Alternatives 2, 4a and 4b), it is relevant and appropriate under the factors set forth in the NCP..

Comment 5: On the issues of "wetlands" and various related ARARs, the Remedial Investigation and Feasibility Study (RI/FS) Report Sand, Gravel, and Stone Site, Final Report, July 1985 states the following:

> "The project site contains no natural wetlands. Two low-lying areas within the site resemble such lands: the Sedge Meadow and the swampy area south of Pond P01, and the Old Sedimentation Pond south of the Lower Haul Road near the southern edge of the site. These low-lying areas were created as a result on artificial impoundment of runoff from the site."

Based on this fact and the nature of nearby undisturbed upland areas, the "original hydrology" of the Site was not "wetland hydrology" (see Federal Manual for Identifying and Delineating Jurisdictional Wetlands). Therefore, the wetlands ARARs should not apply.

Response to Comment 5: EPA does not agree that the applicability of these ARARs turn on whether or not the existing wetlands were created by human activity. See, for example, U.S. v. Lamplight Equestrian Center, Inc., 2002 WL 360652 (N.D.Ill., 22002); U.S. v. St. Bernard Parish, 589 F.Supp. 617, 620 (E.D. La., 1984); U.S. v. Holland, 373 F.Supp. 665, 673 (M.D. Fla., 1974); U.S. v. Ciampitti, 583 F.Supp. 483 (D.N.J., 1984), affirmed, 772 F.2d 893 (3rd Cir., 1985), cert. denied, 475 U.S. 111014 (1986). Since wetlands exist on the Site, these ARARS apply.

Comment 6: The discharge from the groundwater treatment plant has not demonstrated actual or potential toxicity; therefore, COMAR 26.08.03.07 does not apply.

Response to Comment 6: It is true that the discharge from the ground water treatment plant has not demonstrated actual toxicity. However, based on the nature of the constituents and our expectation that conditions in the aquifer will be altered following implementation of the enhanced biodegradation component of the remedy, the potential for toxicity exists. Therefore, EPA is selecting COMAR 26.08.03.07 as an ARAR although it will only result in additional requirements if the discharge includes a toxic substance.

Comment 7: With respect to the bog turtle, ERM biologists have kept a cumulative list of species encountered at the Site (via site inspections at least 3 times a year since 1996) and has specifically looked for bog turtle habitat. They have concluded that bog turtle habitat is highly unlikely at the Site. Therefore, the Endangered Species Act should not be listed as an applicable requirement.

Response to Comment 7: EPA believes that this ARAR has been appropriately identified. It may be that the actions taken to date will be determined to constitute compliance with the Endangered Species Act.

Comment 8: COMAR stormwater requirements are applicable for all alternatives (except no action). These requirements would cover the technical requirements of a NPDES stormwater permit and should be sufficient to address concerns regarding stormwater discharge issues. NPDES stormwater requirements should not apply to alternatives that have construction activities less than 5 acres.

Response to Comment 8: In response, EPA notes that construction activities that result in land disturbance of equal to or greater than one acre and less than five acres are covered by 40 CFR Section 122.26(b)(14). See also, Exhibit 1 to 40 CFR Section 122.26(b)(15).

Comment 9: COMAR 26.11.15.07 thru .13 have been re-issued as 26.11.16.03 thru .09.

Response to Comment 9: EPA has changed the ARARs chart in the ROD to refer to COMAR 26.11.16.03 through .06, .08 and .09. EPA has retained the reference to COMAR 26.11.15.07, as it remains applicable (and incorporates by reference the substantive comments of COMAR 26.11.16.02A and B).

[There was no comment numbered 10 included in these comments.]

Comment 11: 40 CFR 264.1(j) (which are requirements applicable to remediation waste management site rather than traditional RCRA facilities), should replace the requirements contained under 40 CFR 264 Subparts B, C, and D.

Comment 12: 40 CFR 264.553 "Temporary Units" should replace 40 CFR 264 Subpart I "Use and Management of Containers" and Subpart J "Tank Systems".

Comment 13: 40 CFR 264.554 "Staging Piles" should replace 40 CFR 264 Subpart L, "Waste Piles" as the more appropriate ARAR.

Response to Comments 11, 12 and 13: As of this date, these requirements have not been incorporated into the State of Maryland's authorized RCRA program. Therefore, they are not applicable at the Site. Under the circumstances, EPA has decided they are not relevant and appropriate. Even if EPA had made a different determination in this latter regard, the remedial action would still have to comply with the cited State requirements, as they are State ARARs that would be more stringent than the federal ARAR.

D. Comments from Maryland Sand, Gravel and Stone Company (submitted by ARM Group, Inc.)

Comment 1: The Proposed Plan states that "EPA considers residential use to be the reasonably anticipated future use for the site", although this future use is not considered to be practical, realistic, or in the best interests of the community. As stated in the Proposed Plan, EPA based its assumption of future residential use of the property on the current and surrounding zoning, and the average growth within Cecil County. However, this rationale does not apply to a Superfund site, particularly not the MSGS Site, for a number of reasons such as the following:

Comment 1a: As revealed through the July 31, 2002 public meeting, as well as related newspaper articles from a local paper, it is clear that a significant portion of the community would prefer to not live near a Superfund Site, let alone on a Superfund Site or even on a former one. This perception of Superfund sites is common and pervasive. If and when perceptions may change, there are a significant number of competing and available parcels of land for residential development in the area that would discourage such development at the MSGS site.

Response to Comment 1.a: The commentor suggests that comments at the July 31, 2002 public meeting evidenced that the community does not agree with EPA's proposed future land use scenario, which is based on existing zoning and planning. EPA disagrees and believes that a fair reading of the transcript of that meeting shows community support for EPA's proposed land use assumption. For instance, one local resident stated at the public meeting:

> ...my final comment, and I feel probably everyone else feels the same way in this room. Acceptable levels now, ten years from now we'll find out that that level was not acceptable, so I would like to see it thoroughly cleanedd up to the point where that if we wanted to build in that area, that it would be acceptable to build on, that the land is clean for everyone now and in the future. Thank you.

A.R. (Public Meeting transcript., p. 54, lines 2 through 10), EPA believes that a more accurate reading of the comments received at the meeting are that many residents are upset that they were

not informed that they were purchasing property near a Superfund site. This was in part a concern about property values, and an overriding concern about the protection of public health. EPA believes it would be a misreading of the concerns expressed at the public meeting to use those comments to justify selecting a less complete cleanup of the Site.

Comment 1b: According to a 1999 EPA document, out of 170 Superfund sites that had been returned to productive use, only 6 were used for residential development.

Response to Comment 1b: The commentor does not identify the 1999 EPA document to which it refers. Regardless, EPA believes the facts in the record adequately support its decision to assume future residential use of the Site.

Comment 1c: Infrastructure (water, sewer, roads, services) is not in place at the site, and costs would be significant. Because of the impacted ground water at and in the vicinity of the Site, a public or community water system would likely be required.

Comment 1d: Ground water use is restricted at the site and public water would need to be implemented at a significant cost.

Response to Comments 1.c and d: It is EPA's understanding, based on the March 19, 2002 letter from Eric S. Sennstrom, Cecil County's Director of Planning, Zoning, Parks and Recreation, that a major subdivision is proposed across the street from the Site. The developer anticipates supplying public sewer and private water for this development. This indicates that such development is feasible and economic in the area. Once the ground water cleanup standards are met, a public or community water system would not necessarily be required for future residential development to occur. Given that census data shows that Cecil County is one of the most rapidly growing residential areas in the State, EPA is concerned that this piece of property not be eliminated as a potential site for future residential development, given the record that exists regarding the factors to be considered.

Comment 1e: The site topography is the result of former quarrying activities, and is not suitable for residential site development in its current condition. Significant volumes of fill would likely have to be imported at significant, if not prohibitive, costs to a residential developer.

Response to Comment 1.e: A future developer may feel it is appropriate to leave some of the most irregular topographical areas as hiking or nature areas. Or the price of fill may turn out not to be prohibitive, given the values of homes at that time.

Comment 1f: The need to continue groundwater remediation for a significant, indefinite period of time at the property would lower the suitability of the site for residential developments that depend on groundwater for drinking water.

Response to Comment 1.f: EPA agrees that in the immediate future the Site is not available for residential development and, indeed, the remedy includes temporary institutional controls that would prevent such development. EPA does not agree that because the contamination has caused this Site to be unavailable for residential use while the cleanup is effectuated justifies leaving it in that condition in perpetuity.

Comment 1g: The $40 million federal lien on the property would prevent residential development.

Response to Comment 1.g: EPA has filed a lien on the property because the federal government is owed money which has been expended from the Superfund to address this property. This is an enforcement mechanism designed to ensure that the property owner (who is the submitter of this comment) does not achieve a windfall profit from the development of the property while the Superfund is left unreimbursed after the Site is improved through environmental cleanup actions. The conditions under which the lien could be lifted or satisfied are primarily enforcement matters. However, EPA finds ironic the notion that this PRP would charge others a fee in exchange for allowing them to dispose of waste on its property, fail to reimburse the Superfund for money expended in addressing this problem, and then argue that the government's efforts to recoup these expenditures are a reason why this PRP and/or other PRPs should not be required to cleanup the property to a level that protects public health under the most likely land use for the area.

Comment 2: The Proposed Plan is based on an unrealistic and potentially unsafe future land use assumption of residential development, and the Plan should therefore be modified to include or encourage a more appropriate, protective and beneficial future site use such as the rubble fill and community recreation area alternative. As stated in the Proposed Plan, the residential future use scenarios present the greatest exposure and health risks at the site, with risks to on-site residents generally "2 to 3 times greater than risks for potential on-site workers". EPA also states in the Proposed Plan that indoor air quality may present potential health risks in the future if the site were to be developed for residential use. These factors, combined with the fact that the site was a previously uncontrolled waste disposal site, with at least some potential gaps in the characterization of the entire 200-acre site, confirm that future residential development would present greater risks to human health than a non-residential use alternative such as the rubble fill and community recreation area alternative. The more realistic, responsible and appropriate goal of the selected remedy for the site is a beneficial non-residential use that discourages residential use.

Response to Comment 2: Commentor appears to misunderstand the record. The "2 to 3 times greater ...risks" to which this comment refers is the risk which would exist if residential development occurred under a "no action" scenario, i.e., if no cleanup occurred. With respect to indoor air quality, it is not expected to represent a risk under EPA's temporary land use restrictions which make residential development unlikely until the ground water clean up standards are met. Regarding the characterization of the entire Property, the selected remedy

includes a thorough, preremediation sampling plan to ensure that all materials that contain contaminants that exceed action levels are identified and that no pockets of contamination remain. Therefore, EPA does not agree with this comment's conclusion that residential use of the property should be discouraged. The local community has the authority to regulate land use through zoning.

Comment 3: The schedule for site cleanup and redevelopment is undefined in the Proposed Plan, but needs to be defined to allow for a useful comparison of remedial and redevelopment options, and to help prevent the site from being abandoned and unused for the indefinite future. The Proposed Plan states that land use restrictions will be required until the completion of the groundwater remediation activities. However, the Plan does not indicate how long these activities will be required, and it is possible that they could be required for 30 years or more. These restrictions discourage many future uses of the property, and absent clear direction in the ROD, will cause the site to remain unused and abandoned for the indefinite future, as opposed to returning it to safe and productive use under the rubble fill and community recreation area remedial alternative.

Response to Comment 3: EPA agrees that it could take 30 years for the Site to be returned to a state in which it is available for unrestricted use. EPA does not think this timeframe is unreasonable, given the level of contamination and the balancing of the nine evaluation criteria outlined in the NCP. See, also, Response to Comment 1.f.

Comment 4: The Proposed Plan is not consistent with EPA's Superfund Redevelopment Initiative (SRI), and should be modified to present the known rubble fill option, in conjunction with the remedial action proposed, to be consistent with EPA's SRI Program. EPA's SRI Program exists to ensure that Superfund remedies are selected and implemented to promote or ensure future beneficial use of such sites. However, other than assuming a potential future residential use of the property, the Proposed Plan does not specify nor encourage any realistic or practical future use of the property. The rubble fill and community recreation area redevelopment alternative presents an ideal opportunity for the EPA to select a remedy in the early remedial stage that is consistent with the intentions and purpose of the SRI Program. Such support is critical at this stage of the project to promote future beneficial site use, as only 300 of the approximately 1,500 existing Superfund sites have been returned to productive use (based on a July 2002 EPA document).

Response to Comment 4: EPA does not agree, on the record that exists, that it would be appropriate for the Agency to select one future use, the viability of which has not been determined, and insist that the Site be cleaned up in accordance with that use, when a reasonable, viable alternative exists which can accommodate not only the suggested use but other uses which other members of the community have expressed a preference for. In fact, EPA's selected remedy allows unfettered use of this Site and, if the landowner can, consistent with its other obligations, including compliance with local and state laws regarding construction debris landfills and land use, develop its land in that manner, it is free to do so.

Comment 5: The Proposed Plan is not consistent with EPA's Remedial Action Objectives (RAOs), and should be modified to present the rubble fill alternative that better satisfies the RAOs for the Site. One of EPA's stated Remedial Action Objectives for the project is to "protect human health for current and future site use". However, as detailed above, EPA's preferred remedy does not necessarily provide the greatest protection of human health for future residential site use, with risks that are 2 to 3 times higher than for an on-site worker. Because the rubble fill and community recreation area redevelopment alternative better satisfies the EPA's remedial action objectives than the Proposed Plan, it should be included as part of the selected remedy. Examples of the greater level of protection provided by the rubble fill and community recreation area alternative as compared to the Proposed Plan include the following:

Response to Comment 5: Again, the commentor seems to have confused the risk figures for residential use absent any cleanup with EPA's selected remedy, which is not less protective than a construction debris landfill.

Comment 5.a: The rubble fill alternative prevents future residential exposures, which have been determined by the EPA to present much greater health risks than the non-residential exposures that would be associated with rubble fill construction and operation;.

Response to Comment 5.a: It is only residential use with no cleanup which presents the risks referred to by the commentor.

Comment 5.b: The rubble fill would provide near-term and long-term occupation and control of the Site, allowing for better site security and prevention of unauthorized activities or trespassers that could increase exposure risks;.

Response to Comment 5.b: These types of controls are not needed if the Site is totally cleaned up, as EPA's selected remedy requires.

Comment 5.c: If any unidentified contamination or similar conditions were encountered at the Site in the future, they could be addressed much more appropriately and safely by the landfill construction workers than residential developers or the residents themselves.

Response to Comment 5.c: See above, regarding the requirement for a comprehensive preremediation sampling plan. The selected remedy will eliminate risks to future users of the Site, be they workers or residents.

Comment 5.d: Treated or untreated soils could be placed into a designated portion of the rubble landfill for safe and secure containment as opposed to be being left in, or returned to, the environment as part of the remedy as currently proposed.

Response to Comment 5.d: Such measures are not needed under EPA's comprehensive selected alternative because no soils will be left onsite at levels that are of concern.

Comment 5.e: The rubble landfill itself (including bottom liner, the rubble fill, and the final cover) will provide a significant and long-term barrier against exposures to the MSGS Site soils and groundwater, thereby minimizing future exposure risks.

Response to Comment 5.e: EPA prefers a remedy which provides for treatment, rather than simply burial, of contaminated media.

Comment 6: EPA's Proposed Plan presents significant long-term exposure risks, and should be modified to restrict uses with the greatest potential exposure risks, and to specify or encourage uses with lower risks, such as the rubble fill and community recreation area alternative. As detailed above, future residential use of the property would present increased exposure and health risks to on-site residents. As a result, such uses should be restricted or discouraged in favor of the known and protective future site use, such as the rubble fill and community recreation area alternative proposed by MSGS. Such directing of future land use in the selected remedy would be consistent with the methods commonly required by the EPA for implementing institutional controls at Superfund Sites. As it stands, EPA has provided only a sketchy vision of future site use and institutional controls, which will ensure that the property remains an unproductive Brownfield into the foreseeable future.

Response to Comment 6: Again, this comment is premised on the incorrect notion that residential use represents an increased risk. This is only true (and the context from which the commentor originally selected the related statement makes this clear) if no cleanup is implemented.

Comment 7: The rubble fill and community recreation area redevelopment alternative, in conjunction with the proposed remedial approach, better satisfies the CERCLA remedy evaluation criteria (as detailed below), and should therefore be selected over EPA's currently Proposed Plan as required by CERCLA.

Response to Comment 7: EPA believes that the selected remedy represents the best balance of the nine selection criteria outlined in the NCP.

Comment 7.a: Overall Protection of Public Health – Because of the reduced risk to on-site workers as opposed to on-site residents, as detailed above, the rubble fill alternative provides greater protection of public health.

Response to Comment 7.a: Again, this comment is based on a mischaracterization of the record. The additional risk to onsite residents was based on the no action alternative.

Comment 7.b: Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) – The rubble fill would be designed and operated in accordance with all applicable laws and regulations, and would therefore meet this criteria at least as well as the Proposed Plan.

Response to Comment 7.b: The record does not contain enough information for EPA to determine whether the construction debris landfill could be constructed on the Site in a manner which would comply with all state environmental and facility siting laws which would apply or be determined to be relevant and appropriate. Because this latest proposal of the landowner PRP was broached in the last few months of the remedy selection process, which extended over several years and of which the landowner commentor was aware, it was not one of the alternatives for which a full-scale ARARs analysis was done. Furthermore, given the relatively recent nature of the proposal, and the lack of a complete record regarding potential community concerns, environmental or otherwise, with such a land use, EPA is concerned that designating this land use as part of the remedy would, in fact, insulate the proposal from any local ordinances which otherwise might be applicable (since strictly local ordinances are not ARARs under Superfund). EPA believes such a land use should be subject to the normal permitting process and accompanying public input which such process entails. EPA does not agree that it would be appropriate to require that the selected remedy include this specific land use, when there is no evidence that it is more protective than the selected remedy, and the selected remedy allows for this use as well as other uses which the record suggests may be more appropriate or more acceptable to the wider community. Nevertheless, EPA remains willing to work with the landowner and the local community with the goal of returning the property to beneficial use.

Comment 7.c: Long-Term Effectiveness – The closed rubble fill and community recreation area would provide for long-term control of the site and protection from any residual contamination that could remain at the completion of the soil and ground water remediation activities, and therefore provides greater long-term effectiveness.

Response to Comment 7.c: First, EPA notes that the actual criterion under the NCP includes both long-term effectiveness and permanence. This commentor described this criterion as "long-term effectiveness, omitting the "permanence." Permanence is a significant factor in EPA's preference for its selected remedy over both this construction debris landfill and/or Alternative 2.

Comment 7.d: Short-Term effectiveness – Because the rubble fill construction could proceed immediately following the soil remediation activities for all 200 acres of the MSGS Site, while the Proposed Plan allows continued access to trespassers and associated risks on the whole MSGS Site and ensured the non-use of the entire site in the short-term, the short-term effectiveness of the rubble fill and community recreation area alternative is greater than for the Proposed Plan.

Response to Comment 7.d: EPA does not agree that this landfill could necessarily be put into place in the short timeframe described by this commentor. In addition, once the soil remediation activities are complete, trespassers would not be exposed to unacceptable risks. Thus, the construction debris landfill does not result in a lower risk for this group.

Comment 7.e: Implementability – The rubble fill and community recreation area alternative can be implemented with the support of the EPA, the State and the community.

Response to Comment 7.e: It is unclear whether the construction debris landfill has the support of the State or the community. If the landowner wants to pursue this land use, it should use the normal process available to any other landowner in the State, which represents the State's decision on how to balance any given landowner's desire to use its property in a certain way with the State's interest in regulating such use in the interest of the wider community. EPA does not agree that this use would enhance the protectiveness or implementability of the remedy, although it is understandable if the landowner PRP feels that having it included as part of the remedy might enhance its ability to achieve this land use. Such is not the purpose of the Superfund program.

Comment 7.f: Reduction of Mobility, Toxicity or Volume through Treatment – The rubble fill and community recreation area alternative meets this criterion to exactly the same extent as the Proposed Plan.

Response to Comment 7.f: Assuming this comment refers to a construction debris landfill and community recreation area in conjunction with the selected remedy, we agree.

Comment 7.g: Cost – Because fees can be charged for the acceptance of construction and demolition debris to a rubble landfill, this alternative can be at least as cost-effective as the Proposed Plan.

Response to Comment 7.g: The commentor seems to be confusing profits, which accrue to the landowner PRP and/or its lessee under this scenario (in the absence of any agreement to the contrary, which is beyond the scope of this decision) with costs for implementation of the remedy, which EPA must consider and which must be borne by whomever implements the remedy.

Comment 7.h: Community Acceptance – The degree of community acceptance has not yet been established for the Proposed Plan or the rubble fill and community recreation area alternative. However, the rubble fill and community recreation area alternative presents significant benefits over the Proposed Plan, such as the creation of jobs, tax revenues, community services, and an open space and useful recreation area. MSGS is currently garnering local support, and EPA will be periodically updated on the progress of such activities.

Response to Comment 7.h: EPA's general reading of the overall record is that there is more community support for unrestricted future Site use than for a construction debris landfill.

Comment 7.i: State Acceptance - The degree of State acceptance has not yet been established for the Proposed Plan or the rubble fill and community recreation area alternative, although both are anticipated to be acceptable provided that they are both protective and meet all ARARs, and that the rubble fill is permitted, designed and operated in conformance with all applicable state laws and regulations.

Response to Comment 7.i: If the construction debris landfill were made part of the Superfund remedy, no State permit could be required, in accordance with CERCLA Section 121(e). As implied by the commentor's own comment, this alone might cause the State to not accept this proposal.

Comment 8: The Proposed Plan does not address the need to reclaim or remediate the site topography as necessary to support most redevelopment, and therefore presents an unrealistic portrayal of the potential future use of the property. As stated by the EPA in the Proposed Plan, the site "landscape was left deeply gouged, mounded and terraced as a result of quarrying operations". As a result, and like most quarries, reclamation of the site is necessary to facilitate beneficial site re-use. The Proposed Plan does not address site reclamation or the volume of fill that would be needed to make the site suitable for development. As a result, the Proposed Plan is incomplete. The rubble fill and community recreation area alternative, however, would provide for the safe and cost-effective reclamation of the site through the backfilling and covering of clean construction and demolition debris.

Response to Comment 8: See Response to Comment 1.e.

Comment 9: The Proposed Plan unnecessarily restricts the placement of an impermeable surface over the Ground Water Low-Level Threat Area, and this restriction, therefore, needs to be eliminated or modified to avoid restricting productive future use plans, such as the alternative proposed by MSGS. As stated in the Proposed Plan, this restriction has been proposed by the EPA to prevent activities that would interfere with the biodegradation and natural attenuation portions of the remedy. Interpreted too restrictively, this could prohibit the construction of a rubble fill in this area, because the rubble fill has an impermeable bottom liner. However, the rubble fill and community recreation area alternative could be easily designed to include perforated piping or similar measures to provide for simulated infiltration and continued soil flushing and natural attenuation as desired, and should therefore not be restricted. Many other uses could be designed in a similar way to meet the intent of the remedy, yet still including an impermeable surface. The impermeable surface restriction needs to be revised to reflect that impermeable surfaces can be designed to allow the infiltration of water needed for the biodegradation and natural attenuation portions of the remedy.

Response to Comment 9: In response to this comment, EPA has clarified in sections 9.0 and 11.2.13 of the ROD that the institutional control would only prohibit construction which would interfere with the biodegradation and natural attenuation portions of the remedy. If a surface such as that described by this commentor could be constructed such that it would not decrease the amount of infiltration of oxygen and water which would otherwise occur in a given area and would not, otherwise, interfere with the biodegradation and natural attenuation portions of the remedy (and the ground water recovery and collection system), it would not be prohibited.

Comment 10: Although the community and state acceptance of the rubble fill and community recreation area redevelopment alternative are not yet known at this time, the redevelopment

component of the remedy can be made contingent on the success of future inquiries, in the exact same way that biological treatment has been made contingent on the success of future treatability studies in the Proposed Plan. It is common for the EPA to include contingent measures in the Record of Decision (ROD) for a Superfund Site remedy (such as currently proposed for the MSGS site), and although the rubble fill and community recreation area alternative has not yet obtained the necessary permits or approvals, it should be included in the ROD for the MSGS Site because of its significant benefits, contingent on the ability to receive such permits and approvals.

Response to Comment 10: Contingent remedies are generally used by EPA for a situation in which a remedy component is being implemented but there is some chance it will not result in a complete remedy. The contingency is triggered if the initial component does not achieve the desired results, e.g., if certain clean up standards are not met within a certain timeframe. EPA has confidence that the remedy it is selecting is implementable and effective. EPA does not agree that it is appropriate to select as part of the remedy this one specific land use, which appears to be speculative at this point, and which has no record of community support, when doing so would not benefit the protectiveness or implementablity of the remedy itself. See, also, all of the above responses to this commentor.

8/26/82 JCG

SPECTRON

SPECTRON, INC. • 111 PROVIDENCE ROAD • ELKTON, MARYLAND 21921
301 / 398-1736

National Association of Solvent Recyclers

ORIGINAL (Red)

August 26, 1982

Office of Enviornmental Programs
201 West PReston Street
Baltimore, Maryland 21201

ATTN: Mr. Jim Francis.

Dear Mr. Francis:

A review of the waste manifests indicates that Spectron, Inc. has received the following solvents for recycling during the first half of 1982.

Due to the limited time given me to prepare this report, it should be noted that there may be some slight inaccuracies. These inconsistances will be corrected in our annual report.

Methylene Chloride - 217977 gal.
Methyl Chloroform - 117091 gal.
Methyl ethyl Ketone - 109780 gal.
Acetone/Methylene Chloride - 28471 gal.
Acetone - 24185 gal.
Mixed Chlorinated solvents - 21664 gal.
(Methylene chloride, freon, perchloroethylene)
Dimethyl analine - 20000 gal.
Isopropanol - 17073 gal.
Mineral Spirits - 13400 gal.
Perchloroethylene - 8580 gal.
Mixed Solvents
(Methyl ethyl Ketone, Methyl isobutal Ketone, Acetone, cycloroethylene) - 3845 gal.
Freon, Isopropanol mix - 1320 gal.

If you have any questions or comments please do not hesitate to contact me.

Sincerely,

Joseph C. Grace
Environmental Control Mgr.

JCG:cr

Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

188978 (RED) ORIGINAL

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD069373700 Manifest Document No. 243737 38
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: SPENCER KELLOGG TEXTRON, 6401 CHEMICAL RD BALTIMORE MD 21226
4. Generator's Phone (301) 354 1963
A. State Manifest Document Number: MDC 0033738
B. State Generator's ID
C. State Transporter's ID: HWH 192 [illegible] DC [illegible]
5. Transporter 1 Company Name: SPECTRON INC
6. US EPA ID Number: MDD000021800
D. Transporter's Phone: 301 398 1736
7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID: HWH DC
9. Designated Facility Name and Site Address: SPECTRON INC, ELKTON MD
10. US EPA ID Number: MDD000021800
F. Transporter's Phone
G. State Facility ID: #183
H. Facility's Phone: 301 398 1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Xylene Solution Flammable UN1307	001	TT	4827	P	F003
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a. F 2 6827 100%
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. [illegible] c.
b. d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and Maryland statutes or regulations.

Printed/Typed Name: ROBERT DUKSTEIN — Signature: [signature] — Date: Month 02 Day 12 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Nelson G Heath — Signature: [signature] — Date: Month 02 Day 28 Year 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Frederick Mraz — Signature: [signature] — Date: Month 2 Day 28 Year 85

UU33130

EPA Form 8700-22 (7-84)

FACILITY: DETACH & RETURN THIS COPY TO GENERATOR

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (11) 383-6660 nights, and Holidays at (301) 243-8700

Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

000293 ORIGINAL (RED)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD003621731 | Manifest Document No. 26621 | 2. Page 1 of 1 | Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address
Steam Kat Corporation
737 E. Main Street
Salisbury, Maryland 21801

4. Generator's Phone (301) 749-9318

A. State Manifest Document Number MDC 0002662

B. State Generator's ID [redacted]

C. State Transporter's ID [redacted]

D. Transporter's Phone 301-749-9318

5. Transporter 1 Company Name
Steam Kat Corporation

6. US EPA ID Number MDD003421717

E. State Transporter's ID [redacted]

7. Transporter 2 Company Name

8. US EPA ID Number

F. Transporter's Phone

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921

10. US EPA ID Number MDD002182008

G. State Facility ID 252

H. Facility's Phone 301 392 7500

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. Waste perchloroethylene ORM-A UN1897	001	DM	275	G	F001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	T	L	1.6	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. 1P
b.
c.
d.

15. Special Handling Instructions and Additional Information

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Printed/Typed Name: ANDREW PHILLIPS — Signature: Andrew Phillips — Date: Month 01 Day 18 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Michael D Phillips — Signature: Michael D. Phillips — Date: Month 01 Day 18 Year 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Steam Kat Corporation — Signature: — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: John T. Spangler — Signature: John T. Spangler — Date: Month 01 Day 21 Year 85

In case of an emergency or spill, immediately call the National Response Cent. (800) 424-8802 and the Maryland OEP at (301) 3[illegible]

30 nights, and Holidays at (301) 243-8700

TRANSPORTER

FACILITY

MDC 0002662

EPA Form 8700-22 (7-84)

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170 M 1 ORIGINAL (RED)
000332

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD000013120 — Manifest Document No.
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
David A. Beamble Inc Att: David Sharretts
P.O. Box 419 Rt# 291 Chestertown MD 21620
4. Generator's Phone (301) 758 2040 (Denton Plant

A. State Manifest Document Number MDC 0002663
B. State Generator's ID
C. State Transporter's ID HWH 125 85A04498 DC 2757
D. Transporter's Phone 301 749 9318

5. Transporter 1 Company Name: Steam Kat Corp Salisbury Md
6. US EPA ID Number: MDD003427317
7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID 192

9. Designated Facility Name and Site Address
Spectgen
111 Providence Rd
Elckton MD 21921
10. US EPA ID Number: MDD000218008
H. Facility's Phone 301 398 1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
a. Waste Methylene Chloride ORM-A UN 1593	5	DM	275	G	F001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	T	L	1.0	75
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. b
b.
c.
d.

15. Special Handling Instructions and Additional Information

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Printed/Typed Name: D. K. SHARRETTS — Signature: David K Sharrett — Date: Month Day Year 04 19 85

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Steam Kat Corp Mike Phillips — Signature: Mike Phillips — Date: 04 19 85
18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: John J Spaulder — Signature — Date: 04 19 85

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland DEP at (301) 383-6650 nights, and Holidays at (301) 243-8700

MDC 0002663

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HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
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4533 (2 of 4) ORIGINAL (RED)
19082

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDP 000 0 01 2 8 10 25 6 4 — Manifest Document No. 4
2. Page 1 of 1
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3. Generator's Name and Mailing Address
Duo Sofa
Mayler Mill Road P.O. Box 2699 Salisbury, Md. 21801
4. Generator's Phone (301) 742-1566

A. State Manifest Document Number MDC 0002664
B. State Generator's ID [redacted]001281
C. State Transporter's ID HWH 125 [redacted] DC 0759
D. Transporter's Phone 301-749-9318
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID 0192
H. Facility's Phone

5. Transporter 1 Company Name: Steam Kat Corporation
6. US EPA ID Number: MD D 00 3 42 7 31 7
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address: Spectron, 111 Providence Road, Elkton, Maryland 21921
10. US EPA ID Number: MD D 00 0 21 80 0 8 30

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. Waste stain combustible liquid UN1263	3	DM	120	P	D001
b. Waste seam lacquer combustible liquid UN1263	4	DM	160	P	D001
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	1.0	100
b.	I	L	1.0	100
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. T c.
b. T d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and Maryland statutes or regulations.

Printed/Typed Name: Nick Campagnoli — Signature: [signature] — Date Month Day Year: 05 23 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Michael Phillips — Signature: Michael D Phillips — Date Month Day Year: 05 23 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: John T Spangler — Signature: [signature] — Date Month Day Year: 5/23/85

GENERATOR — TRANSPORTER — FACILITY

In case of an emergency or spill immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-8650 nights, and holidays at (301) 243-3700

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MDD981069223 Manifest Document No.: 5855 | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Trans-Tech Inc. 5520 Adamstown RD. Adamstown, MD. 21710

4. Generator's Phone: 301 695-9400

A. State Manifest Document Number: MDC 0035855

B. State Generator's ID

5. Transporter 1 Company Name: SpecTron INC. 6. US EPA ID Number: MDD000218008

C. State Transporter's ID: HWH 192 ... 448

D. Transporter's Phone: 301-398-1736

7. Transporter 2 Company Name: 8. US EPA ID Number:

E. State Transporter's ID: HWH DC

F. Transporter's Phone

9. Designated Facility Name and Site Address: SpecTron INC 111 Providence Rd. Elkton Md. 10. US EPA ID Number: MDD000218008

G. State Facility ID: A-183

H. Facility's Phone: 301-398-1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Solvents NOS Flammable UN1993 Acetone, Trichloreth...	17	DM	340	G	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (Haz Code, Physical State, Specific Gravity, Percentage): a. I L 0.856 95% ; b. ; c. ; d.

K. Handling Codes for Wastes Listed Above: a. T ; b. ; c. ; d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and Maryland statutes or regulations.

Printed/Typed Name: R.D. Goodfellow Signature: [signature] Date (Month Day Year): 07 08 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Nelson G. Heath Signature: [signature] Date (Month Day Year): 07 08 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: Signature: Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Frederick Minz Signature: [signature] Date (Month Day Year): 07 10 85

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-6850 nights, and Holidays at (301) 243-8700

MDC 0035855

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

188974
14212

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD069377014 Manifest Document No. 15572476
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
SPENCER KELLOGG DIV NL IND
6401 CHEMICAL ROAD BALT. MD 21226
4. Generator's Phone (301) 354 1963

A. State Manifest Document Number MDC 0033746
B. State Generator's ID
C. State Transporter's ID HWH 192 DC
D. Transporter's Phone 301 398 1736
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID A183
H. Facility's Phone (301)-398-1736

5. Transporter 1 Company Name: SPECTRON INC
6. US EPA ID Number: MDD000724815
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address: SPECTRON INC, ELKTON MD
10. US EPA ID Number: MDD000721808

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Xylene Solution Flammable Liquid UN1307	001	TT	15666	G	F003
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a. E LT 8774 100%
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. R
b.
c.
d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and Maryland statutes or regulations.

Printed/Typed Name: ROBERT DICKSTEIN — Signature — Date: Month 08 Day 06 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES E MCCRANE — Signature — Date: Month 08 Day 06 Year 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Section 19.
Printed/Typed Name: CHARLENE RINEGRHAN — Signature — Date: Month 10 Day 08 Year 85

EPA Form 8700-22 (7-84)

MDC 0033746

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-8650 nights, and Holidays at (301) 243-8700

GENERATOR
TRANSPORTER
FACILITY

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043375757 — Manifest Document No.

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
Electro Therm
Rt. #404 Denton, Maryland 21629

4. Generator's Phone (301) 479-1441

5. Transporter 1 Company Name
Steam Kat Corporation

6. US EPA ID Number MDD003413717

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921

10. US EPA ID Number MDD002100893

A. State Manifest Document Number MDC 0002697

B. State Generator's ID [redacted]3375757

C. State Transporter's ID HWH 125 [redacted] DC 1759

D. Transporter's Phone 301-749-9318

E. State Transporter's ID HWH [redacted] DC [redacted]

F. Transporter's Phone

G. State Facility ID 0192

H. Facility's Phone 301 739 8176

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. Waste Methylene Chloride ORM-A UN1593	006	DM	330	G	D001
b. Waste trichloroethane ORM-A UN1710	006	DM	330	G	D001
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	1.1	75
b.	I	L	1.0	30
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. T1 b. T1 c. d.

15. Special Handling Instructions and Additional Information

This shipment transferred at Steam Kat Corp., Delmar, De. transfer facility.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and Maryland statutes or regulations.

Printed/Typed Name: Howard J. Mins — Signature: Howard J. Mins — Date: Month 08 Day 29 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Michael Phillips — Signature: Michael Phillips — Date: Month 08 Day 29 Year 85

Steam Kat Corporation

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Nicky Lee McCormick — Signature: Nicky Lee McCormick — Date: Month 08 Day 28 Year 85

0002697

In case of an emergency or spill immediately call the Nat'l Response Center at (800) 424-8802 and the Md. DEP at (301) 383-6650 nights, and Holidays at (301) 243-3700

EPA Form 8700-22 (7-84)

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Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

ORIGINAL (RED) 14456

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. / Manifest Document No.: [illegible]
2. Page 1 of —
Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: MDC 0035858

3. Generator's Name and Mailing Address: [illegible] Inc. [illegible] Rd. [illegible] MD 21701
4. Generator's Phone: [illegible] 685-6400
5. Transporter 1 Company Name: [illegible] Inc.
6. US EPA ID Number: MDD 000218008
B. State Generator's ID:
C. State Transporter's ID: HWH 18(?)8(?)5A0334 DC 00498
D. Transporter's Phone: 301-398-1736
7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID: HWH DC
F. Transporter's Phone:
9. Designated Facility Name and Site Address: Spectron, Inc. 111 Providence Rd. Elkton, Md. 21921
10. US EPA ID Number: MDD000218008
G. State Facility's ID: A-183
H. Facility's Phone: 301 398 1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Acetone - Flammable Liquid - UN1090 RQ = 5000 lb. (If released notify National Response Center)	1	DM	110	GAL	D001
b. Waste Kerosene - Combustible Liquid UN1223 RQ = N.A. (If released notify National Response Center)	1	DM	55	GAL	D001
c. Waste 1,1,1 Trichloroethane - ORM A UN2831 RQ = 1000 lb (If released notify National Response Center)	3	DM	165	GAL	D001
d.					

J. Additional Descriptions for Materials Listed Above

	Haz Code	Physical State	Specific Gravity	Percentage
a.	T	L	1.30	85%
b.	T	L	1.00	90%
c.	T	L	1.66	90%
d.				

K. Handling Codes for Wastes Listed Above: a. T b. T c. T d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and Maryland Statutes or Regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: [illegible] Signature: [illegible] Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Nelson G. Heath Signature: Nelson G. Heath Date: 10 03 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: CHARLENE RINKELMAN Signature: Charlene Rinkelman Date: 10 03 85

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-8850 nights, and Holidays at (301) 243-8700

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDX 200 0 6 060 | Manifest Document No. 17075 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Eurshall Miller Body Shop
123 Columbia Drive Salisbury, Md. 21801

4. Generator's Phone (301) 742-7329

5. Transporter 1 Company Name: Steam Kat Corporation
6. US EPA ID Number: MDD 003 42 7 31 7

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921
10. US EPA ID Number: MDD 000 2 18 0 08

A. State Manifest Document Number: MDC 0017075
B. State Generator's ID: [illegible]60601
C. State Transporter's ID: HWH 125 [illegible] DC 2156
D. Transporter's Phone: 301-749-9318
E. State Transporter's ID: HWH [illegible] DC [illegible]
F. Transporter's Phone
G. State Facility ID: 212
H. Facility's Phone: 301 398 1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste solvent NOS flammable liquid NA1993	1	DM	550	P	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a. [illegible] .85 100
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. [illegible] c.
b. d.

15. Special Handling Instructions and Additional Information
This shipment transfered at Steam Kat Corp. Delmar, Dela transfer facility.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name: [illegible] Signature: [illegible] Month Day Year: 12 13 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John H Cuba Signature: John H Cuba Date: 12 13 85
Steam Kat Corporation

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] Signature: [illegible] Date: [illegible]

MDC 0017075

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GENERATOR

TRANSPORTER

FACILITY

In case of an emergency or spill, immediately call the Yellow Response Center at (800) 424-8802 and the Maryland DEP at (301) 383-6650 nights, and Holidays at (301) 243-8700

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD003057097 Manifest Document No. 001714 0

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Mulholland Harper
P.O. Box C Denton, Md. 21629

A. State Manifest Document Number MDC 001 7140

B. State Generator's [redacted]

4. Generator's Phone 301 479-1300

5. Transporter 1 Company Name
Steam Kat Corporation

6. US EPA ID Number MDD 008 627 317

C. State Transporter's ID HWH [redacted] DC 236

D. Transporter's Phone 302 749-9318

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID HWH DC

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921

10. US EPA ID Number MDD 002 188 008

F. Transporter's Phone

G. State Facility ID [redacted]

H. Facility's Phone 301 398 1739

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste paint related material NA1263 flammable liquid	4	DM	2000	P	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	.95	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. D83 b. c. d.

15. Special Handling Instructions and Additional Information
This shipment transfered at Steam Kat Corp. Delmar, De. transfer facility.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name: Michael Conner
Signature: [signature]
Month Day Year: 05 05 86

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John H Culver
Signature: [signature]
Date: Month Day Year: 05 05 86

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name:
Signature:
Date: Month Day Year:

EPA Form 8700 22 (7 84)

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-5650 nights, and Holidays at (301) 243-8700

MAJOR

TRANSPORTER

FACILITY

Waste Management Administration • Hazardous Waste Division
P.O. Box 13877 • Baltimore, Maryland 21203

(RET

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MD D 0 2 2 6 7 9 9 6 3 | Manifest Document No. 7 1 2 9 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Nix Hoore Business Forms
201 Baltimore Street Snow Hill, Maryland 21863
P.O. Box 269

4. Generator's Phone (301) 632-1460

5. Transporter 1 Company Name
Steam Kat Corporation

6. US EPA ID Number MD 0 0 3 6 2 7 3 7

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921

10. US EPA ID Number MD 0 0 2 1 8 0 0 8 5 0

A. State Manifest Document Number MDC 0017129
B. State Generator's ID [redacted]2679963
C. State Transporter's ID HWH 128 86A-811 DC 2235
D. Transporter's Phone 301-769-9318
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID 0113
H. Facility's Phone 1 0 1 3 9 8 1 7 3 6

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste flammable liquid NOS UN1993 flammable liquid		H D M	1500	P	D 0 0 1
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
e.	I	L	.95	100
f.				
g.				
h.				

K. Handling Codes for Wastes Listed Above
a. T1 b. c. d. e. f.

15. Special Handling Instructions and Additional Information
This shipment transfered at Steam Kat Corp. Delmar, De. transfer facility.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.
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Printed/Typed Name	Signature	Month Day Year
William C. Taylor	William C. Taylor	0 5 0 6 8 6

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date: Month Day Year
J. MARK HITCH	[signature]	0 5 0 6 8 6

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date: Month Day Year
[illegible]	[signature]	

MDC 0017129

EPA Form 8700 22 (7 84)

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SEND THIS COPY TO DESIGNATED FACILITY

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 383-5650 nights, and Holidays at (301) 243-8...

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

16031 (Rev)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. H D D D 0 0 2 1 8 0 0 8 — Manifest Document No. 86302
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
IBM CANADA LTD
23 AIRPORT BLVD
BROMONT QUE CANADA JOE 1L0
4. Generator's Phone (514) 776-2011

U.S. IMPORTER
SPECTRON, INC
111 PROVINCE ROAD
ELKTON, MARYLAND USA 21921
301/398-1736

A. State Manifest Document Number: MDC 0098487
B. State Generator's ID:
C. State Transporter's ID: HWH [illegible] DC [illegible]
D. Transporter's Phone: (514) 632-6640
E. State Transporter's ID: HWH [illegible] DC [illegible]
F. Transporter's Phone:
G. State Facility ID:
H. Facility's Phone: A-183

5. Transporter 1 Company Name: TRICIL (QUEBEC) INC
6. US EPA ID Number: M Y D 9 8 0 7 7 3 6 7 5
7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
SPECTRON, INC
111 PROVIDENCE ROAD
ELKTON, MARYLAND USA 21921
10. US EPA ID Number: M D D 0 0 0 2 1 8 0 0 8
3 0 1 3 9 8 1 7 3 6

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE ISOPROPANOL, CLASS 3.2, UN 1219 PACKING GROUP II	0 0 1	T T	32296	P	F 0 0 3
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	T	L	0.8	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above: a. R c. b. d.

15. Special Handling Instructions and Additional Information
IBM TANK: RW-03 SEAL# 302223
IBM CONTRACT- 86400 IBM EMERGENCY PHONE (514) 776-2501

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.
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Printed/Typed Name: CAMIONNEUR DE TRICIL: ROLAND LAPLANTE
Signature: Roland Laplante
Month Day Year: 1 1 0 9 1 2 8 6

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Roland LaPlante
Signature: Roland Laplante
Date: Month Day Year: 0 9 1 2 8 6

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

19. Discrepancy Indication Space: 2.1 13. 32296 14. P C 86A

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name:
Signature:
Date: Month Day Year:

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland DEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

GENERATOR — TRANSPORTER — FACILITY

MDC 0098487

EPA Form 8700-22 (7-84)

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

ORIGINAL (Red) 16143

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. H D 0 0 0 0 2 1 8 0 0 8 | Manifest Document No. 16143
2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
IBM CANADA LTD
23 AIRPORT BLVD
BROMONT (QUEBEC) CANADA JOE ILO
4. Generator's Phone (514) 776-2011

U.S. IMPORTER
SPECTRON INC
111 PROVIDENCE RD
ELKTON, MARYLAND 21921
(301) 398-1736

A. State Manifest Document Number MDC 0108651
B. State Generator's ID SAME
C. State Transporter's ID HWH 448 DC 3601
D. Transporter's Phone (514) 632-6640
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID A-183
H. Facility's Phone (301)-398-1736

5. Transporter 1 Company Name: TRICIL (QUEBEC) INC
6. US EPA ID Number: N Y D 9 8 0 7 7 3 6 7 5
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address
SPECTRON INC
111 PROVIDENCE RD
ELKTON MD 21921
10. US EPA ID Number: M D D 0 0 0 2 1 8 0 0 8

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~WASTE TETRACHLOROETHYLENE SOLUTION, CLASS 9.2, UN 1897, PACKING GROUP III~~ ~~ORM-A~~	24	DM	1980	~~P~~ G	F002
b. WASTE 1,1,1 - TRICHLOROETHANE, CLASS 9.2, UN2831, PACKING GROUP III cat 6 ORM-A	36	DM	19810	G	F002
c. Waste Trichlorotrifloroethane UN9189 cat E	24	DM	1320	G	D001
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.				
c.	I	L	1514	100
b.	T	L	1.3	94
d.				

K. Handling Codes for Wastes Listed Above
a. R c. R
b. R d.

15. Special Handling Instructions and Additional Information
IBM CODE: CAT. E, CAT. B SEAL# BILL OF LADING #
IBM CONTRACT: 86400 IBM EMERGENCY PHONE (514) 776-2501

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.
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Printed/Typed Name: RICHARD POTVIN Signature: Richard Potvin Month Day Year: 11 02 3 86

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: PIERRE COUTURE R Signature: Pierre Couture R Date: Month Day Year: 11 03 3 86

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: ROLAND LaPLANTE Signature: Roland LaPlante Date: Month Day Year: 11 03 86

19. Discrepancy Indication Space
11a. Incorrectly described. Correction in 11c
6. NYD980773675
12. a 24 DM 14. a G 13 a. 1730
11. a ~~ORM-A~~ b ORM-A
b. 36 DM b. G
c. 24 DM c. G
c. 1320

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: CHARLENE RINKERMAN Signature: Charlene Rinkerman Date: Month Day Year: 11 12 6 86

EPA Form 8700-22 (7-84) COPY 3-FACILITY: DETACH & RETURN THIS COPY TO GENERATOR

GENERATOR — TRANSPORTER — FACILITY

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

MDC 0108651

HAZARDOUS WASTE MANIFEST
Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

16138

ORIGINAL

...ase print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039 Expires 9/30/88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: VAD064872575 — Manifest Document No.: 00045
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: IBM Corporation, 9500 Godwin Drive, Manassas, Virginia, 22110
A. State Manifest Document Number: MDC 0130258
B. State Generator's ID: SAME
4. Generator's Phone (703) 367-2121
C. State Transporter's ID: HWH 102 844200 DC 00498
5. Transporter 1 Company Name: Spectron, Inc.
6. US EPA ID Number: MDD000218008
D. Transporter's Phone: 301-398-1736
7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID: HWH DC
F. Transporter's Phone:
9. Designated Facility Name and Site Address: Spectron, Inc., 111 Providence Road, Elkton, Maryland 21921
10. US EPA ID Number: MDD000218008
G. State Facility ID: A-183
H. Facility's Phone: 3013981736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste, Isopropanol, Flammable liquid, UN1219	001	TT	37040	P	D001
b.					
c.					
d.					

OCT 86 41 42

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	.802	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above: a. R

15. Special Handling Instructions and Additional Information: If unable to deliver to primary TSDF contact Generator for alternate disposal instructions. Return signed manifest to IBM Corporatio 9500 Godwin Drive, Manassas Virginia, 22110 ATTN: Ben Williams, Bldg/216

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: Jeffrey Batson — Signature: Jeffrey Batson — Date (Month Day Year): 10 24 86

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Nelson G Heath — Signature: Nelson G Heath — Date: 10 24 86

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: CHARLENE RINKERMAN — Signature: Charlene Rinkerman — Date: 10 24 86

MDC 0130258

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP (301) 225-5700 nights, and Holidays at (301) 243-8700.

GENERATOR — TRANSPORTER — FACILITY

EPA Form 8700-22 (7-84)

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

ORIGINATE (RED)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD061737012 — Manifest Document No. 7253
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Spencer Kellogg Products EL Chemicals/EL Industries
Coal Chemical Road
Baltimore, MD 21226
4. Generator's Phone (301) 354-1963

A. State Manifest Document Number MDC 0077253
B. State Generator's ID
C. State Transporter's ID HWH [redacted] DC [redacted]
D. Transporter's Phone [redacted]
E. State Transporter's ID HWH [redacted] DC [redacted]
F. Transporter's Phone
G. State Facility ID A-183
H. Facility's Phone 301-398-2736

5. Transporter 1 Company Name: Spectrum Inc. — 6. US EPA ID Number: MDD002218008
7. Transporter 2 Company Name — 8. US EPA ID Number
9. Designated Facility Name and Site Address: Spectrum Inc., 111 Providence Rd., Elkton, MD 21921 — 10. US EPA ID Number: MDD002218008

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Xylene Solution Flammable UN 1307	001	DT	392	P	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a. Haz. Code: X — Physical State: L — Specific Gravity: .871 — Percentage: 3815
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. D
b.
c.
d.

L. Special Handling Instructions and Additional Information

14. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: Roland P. Bateman — Signature — Month Day Year: 12/4/86

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Harvey L. Davis — Signature — Date: 12/4/86

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Date

EPA Form 8700-22 (7-84)

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-6700.

MDC 0077253

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

16362

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UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. VAD064872575 Manifest Document No. 00053	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
IBM Corporation
9500 Godwin Drive, Manassas, Virginia, 22110

4. Generator's Phone (703) 367-2100

A. State Manifest Document Number MDC 0131648
B. State Generator's ID SAME
C. State Transporter's ID HWH [illegible] DC [illegible]
D. Transporter's Phone 201 566-3000

5. Transporter 1 Company Name: Nappi Trucking Corp.
6. US EPA ID Number: NJD000313477

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID HWH DC
F. Transporter's Phone

9. Designated Facility Name and Site Address
Spectron Inc.
111 Providence Road
Elkton, Maryland 21921
10. US EPA ID Number: MDD000218008
G. State Facility ID A183
H. Facility's Phone 3013981736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste, Isopropanol, Flammable liquid, UN1219	001	TT	40445	P	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	802	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. [illegible]

15. Special Handling Instructions and Additional Information: If unable to deliver to primary TSDF contact generator for alternate disposal instructions. Return signed manifest to IBM Corporation, 9500 Godwin Drive, Manassas, Virginia, 22110 ATTN: Ben Williams, Bldg/216

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: Jeffrey Batson — Signature: Jeffrey Batson — Month Day Year: 1 2 1 9 8 6

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William B Olsen — Signature: [signature] — Date: 1 2 1 9 8 6

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date:

19. Discrepancy Indication Space
G. A183

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: GARY A SMITH — Signature: Gary A Smith — Date: 1 2 4 1 9 8 6

In case of emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP (301) 225-5700 nights

MDC 0131648

EPA Form 8700-22 (7-84) ... RETURN THIS COPY TO GENERATOR

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

ORIGINAL (RED)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MDD 980 827 466 — Manifest Document No.: 23194 — 7. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Sitte-Tischer Corporation
Industrial Park Blvd. P.O.Box 177
Federalsburg, Md. 21632 301-754-9056

4. Generator's Phone

A. State Manifest Document Number: MDC 0123194

B. State Generator's ID: MDP000002746

C. State Transporter's ID: HWH 125 DC 4193

5. Transporter 1 Company Name: Steam Kat Corporation

6. US EPA ID Number: MDD 003 427 317

D. Transporter's Phone: 301-749-9318

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID: HWH DC

9. Designated Facility Name and Site Address
Spectron, Inc.
111 Providence Rd.
Elkton, Md. 21921

10. US EPA ID Number: MDD 002 180 881

F. Transporter's Phone

G. State Facility ID: A183

H. Facility's Phone: 301-398-1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Paint Related Material NA1263 Flammable Liquid	1 x 2	DM	1 1 3 0	P	D 0 0 1
b. Waste Acetone UN1090 Flammable Liquid RQ 5000/2270	1 x 1	DM	1 1 5 0	P	F 0 0 3
c. Waste Trichloroethylene UN1710 ORM-A RQ 1000/454	1 x 1	DM	1 1 0 0	P	F 0 0 2
d. Waste 1,1,1-Trichloroethane UN2831 ORM-A RQ 1000/454	1 x 3	DM	1 5 0 0	P	F 0 0 2

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	0 9	1 0 0	T	L	1 . 4	1 0 0
b.	I	L	0 . 8	1 0 0	T	L	1 . 3	1 0 0

K. Handling Codes for Wastes Listed Above
a. c.
b. d.

15. Special Handling Instructions and Additional Information
This shipment transferred at Steam Kat Dover, De. transfer station.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name — Signature — Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: [illegible] — Signature — Date: 06/28

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Date

MDC 0123194

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

EPA Form 8700-22 (7-84) COPY 5-TRANSPORTER: DETACH & RETAIN THIS COPY FOR YOUR RECORDS

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

189144 ORIGINAL (RED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. HDP000027643 — Manifest Document No. 2379

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Sears, Roebuck & Company (Warehouse)
Brown Street Salisbury, Maryland 21801

A. State Manifest Document Number MDC 0123199

4. Generator's Phone (301, 749-1311

B. State Generator's ID HDP000002764

5. Transporter 1 Company Name: Steam Kat Corporation — 6. US EPA ID Number: HDD003427317

C. State Transporter's ID HWH 123 DC 4457

7. Transporter 2 Company Name — 8. US EPA ID Number

D. Transporter's Phone 301-749-9318

E. State Transporter's ID HWH DC

9. Designated Facility Name and Site Address
Spectron
111 Providence Road
Elkton, Maryland 21921

10. US EPA ID Number: MDD000218008

F. Transporter's Phone

G. State Facility ID A183

H. Facility's Phone 301 391 1735

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste gasoline UN1203 flammable liquid	X X 4	DM	1600	P	D 0 0 1
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	0.8	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. D c.
b. d.

15. Special Handling Instructions and Additional Information
~~This shipment transferred at Steam Kat Delmar, DE. transfer facility.~~

16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name: JERRY NELSON — Signature — Month Day Year: 06 15 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: DONALD C. MATHIAS — Signature — Date Month Day Year: 06 15 87

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date Month Day Year

FACILITY

19. Discrepancy Indication Space
K.K.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: KENNETH MEEKINS — Signature — Date Month Day Year: 06 15 87

MDC 0123199

EPA Form 8700-22 (7-84)

COPY 5-TRANSPORTER: DETACH & RETAIN THIS COPY FOR YOUR RECORDS

F1890615411.4157

17394

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

...se print or type. (Form designed for use on elite (12 pitch) typewriter.) Form Approved. OMB No. 2050-0039 Expires 9/30/88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: M D D 9 8 1 9 4 6 7 5 9 — Manifest Document No.: 7 1 1 4
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Bayliner Corp. 2221 Armstrong Pkwy Salisbury, Md. 21801
4. Generator's Phone: (301) 546-4636

A. State Manifest Document Number: MDC 0125971
B. State Generator's ID: MDD981946759
C. State Transporter's ID: HWH 025 ... DC A0182
D. Transporter's Phone: 301-749-9310

5. Transporter 1 Company Name: Steam Kat Corporation
6. US EPA ID Number: M D D 0 0 3 4 2 7 3 1 7

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID: HWH ___ DC ___
F. Transporter's Phone:

9. Designated Facility Name and Site Address: Spectron, Inc. 111 Providence Rd. Elkton, Md. 21921
10. US EPA ID Number: M D D 0 0 0 2 1 8 0 0 8
G. State Facility ID: A183
H. Facility's Phone: 301-398-1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste acetone UN1090 Flammable Liquid RQ 5000/2270	002	DM	xx890	P	F003
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	1	1	0.8	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above: a. [illegible] b. c. d.

15. Special Handling Instructions and Additional Information

This shipment transferred at Steam Kat Delmar, De. transfer station.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name: Ronald C. Denny — Signature: [signature] — Month Day Year: 08 10 87

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Donald C. Mitchell — Signature: [signature] — Date: 08 10 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date:

19. Discrepancy Indication Space

1.17394 K.a.R

ORIGINAL (RED)

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Terri L Martinuk — Signature: [signature] — Date: [illegible]

MDC 0125971

In case of emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 333-3010 during and (301) 243-8700 nights and holidays.

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

189145 ORIGINAL (RED)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. PA D 03 7 66 5 37 9 — Manifest Document No.

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Schafer's Antiques
1573 E. Philadelphia Ave. Gilbertsville, Pa.
215 367-5630

4. Generator's Phone

A. State Manifest Document Number: MDC 0125991

B. State Generator's ID: PAD037

5. Transporter 1 Company Name: Keystone Block
6. US EPA ID Number: PA D 9 8 06 9 20 0
C. State Transporter's ID: HWH
D. Transporter's Phone: 215-

7. Transporter 2 Company Name: Steam Kat Corporation
8. US EPA ID Number: M D 0 34 2 23
E. State Transporter's ID: HWH 125
F. Transporter's Phone: 301-749-

9. Designated Facility Name and Site Address
Spectron, Inc.
111 Providence Rd.
Elkton, Md. 21921
10. US EPA ID Number: M D 0 02 1 80 0
G. State Facility ID: A183
H. Facility Phone: 301-398-1736

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	
a. Waste Flammable Liquid, NOS UN1993 Flammable Liquid	2	DM	110	P	
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage		Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	0.95	100	c.				
b.					d.				

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
Steam Kat is transporting in Pennsylvania under Keystone Block permit with an affidavit

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name — Signature — Month Day Year: 1 2/14/87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: E. Bowman Jr. — Signature — Date: 2/14/87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name — Signature — Date

MDC 0125991

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

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MD0706SU1.WSD

17592

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MD D98 1946759 — Manifest Document No.: 2 5 9 94
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:
Dayliner Corporation
2221 Armstrong Parkway Salisbury Md. 21801

4. Generator's Phone (301) 546-4656

A. State Manifest Document Number: MDC 0125994
B. State Generator's ID: [illegible]6759
C. State Transporter's ID: HWH [illegible]
D. Transporter's Phone: [illegible]

5. Transporter 1 Company Name: Steam Kat Corporation
6. US EPA ID Number: MD D 003 427 317

7. Transporter 2 Company Name: Steam Kat Corp.
8. US EPA ID Number: MD D 003 427 317

E. State Transporter's ID: HWH [illegible] DC [illegible]
F. Transporter's Phone

9. Designated Facility Name and Site Address:
Spectron, Inc.
111 Providence Rd.
Elkton, Md. 21921

10. US EPA ID Number: [illegible]

G. State Facility ID: A183
H. Facility's Phone: 301 398 [illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste acetone UN1090 flammable liquid RQ 5000/2270	XX2	DM	XX900	P	F003
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	.8	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

This shipment transferred at Steam Kat Delmar, De. transfer facility.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: Mark L Newell — Signature: Mark Newell — Month Day Year: 9 24 87

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES D West — Signature: James D West — Date (Month Day Year): [illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES D. West — Signature: James D West — Date (Month Day Year): [illegible]

19. Discrepancy Indication Space

Ka. R.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Kenneth McKim — Signature: Kenneth [illegible] — Date (Month Day Year): [illegible]

ORIGINAL (RED)

MDC 0125994

In case of emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 243-8700 ... 5700 nights, and Holidays at (301) 243-8700.

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

ORIGINAL (Red)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039 Expires 9/30/88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MD D681700246 — Manifest Document No. 5 4737220
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
LT COOK C/O
DTNSRDC, Annapolis Laboratory
Annapolis, Md. 21402
EPA ID No. corrected by generator
4. Generator's Phone (301) 267-2660

A. State Manifest Document Number MDC 0143720
B. State Generator's ID MD5170026686
C. State Transporter's ID HWH 125 8741906 DC 6746
D. Transporter's Phone 301-749-9318
E. State Transporter's ID HWH DC
F. Transporter's Phone
G. State Facility ID A183
H. Facility's Phone 301-398-1716

5. Transporter 1 Company Name: Steam Kat Corporation
6. US EPA ID Number: MD D003427317
7. Transporter 2 Company Name:
8. US EPA ID Number:
9. Designated Facility Name and Site Address
Spectron, Inc.
111 Providence Rd.
Elkton, Md. 21921
10. US EPA ID Number: MD D002138008

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ✓ Waste Flammable Liquid, NOS UN1993 Flammable Liquid	9	DM	455	G	D001
b. ✓ Waste Hazardous Waste Liquid, NOS NA9189 ORM-E (Oil w/ freon)	3	DM	165	G	F002
c. ✓ Waste Flammable Solid, NOS UN1325 Flammable Solid	1	DM	350	P	D001
d. ✓ Waste Perchloroethylene UN1897 ORM-A RQ	1	DF	165	G	F001

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	1.9	100
c.	I	S	1.1	100
d.	T	L	1.13	100
d.	T	S	1.13	100

K. Handling Codes for Wastes Listed Above: a. T c. T b. d.

15. Special Handling Instructions and Additional Information
AJ 8x55 gal 1x15 gal Transfer at Steam Kat Delmar, Delaware.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.
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Printed/Typed Name: RICHARD COOK Signature: Richard R Cook Month Day Year: 1/10/87

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: ERIC LEE JENKINS Signature: Eric Lee Jenkins Date: Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date: Month Day Year

19. Discrepancy Indication Space
KC. R

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: KENNETH MEEKINS Signature: Kenneth Meekins Date: Month Day Year: 1/11/87

EPA Form 8700-22 (7-84) PREVIOUS EDITIONS ARE OBSOLETE

GENERATOR — TRANSPORTER — FACILITY

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

REPRODUCED AT GOVERNMENT EXPENSE

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

000435 ORIGINAL (RED)

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UNIFORM HAZARDOUS WASTE MANIFEST X

1. Generator's US EPA ID No. | Manifest Document No.
2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ENCOMTROL INC.
Clinton & Cedar Street Greensboro MD 21639

A. State Manifest Document Number MDC 0149821

4. Generator's Phone (301) 482-6986

B. State Generator's ID

5. Transporter 1 Company Name

6. US EPA ID Number

C. State Transporter's ID HWH DC 4741

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone 301-749-9310

E. State Transporter's ID HWH DC

9. Designated Facility Name and Site Address
SECTRON INC.
111 Providence Rd
Elkton MD 21921

10. US EPA ID Number

F. Transporter's Phone

G. State Facility ID MDH A183

H. Facility's Phone 301-398-1700

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
GENERATOR a. WASTE HAZARDOUS SUBSTANCE LIQUID NOS ORM-E NA 9189 (FREAON WITH OIL)	001	DM	0100	P	D001
b. WASTE FLAMMABLE LIQUID NOS FLAMMABLE LIQUID UN 1993 (XYLENE & ACETONE)	002	DM	0100	P	D001
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	F	L	1.0	100
b.			1.0	1993
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. c.
b. d.

Special Handling Instructions and Additional Information

16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and Maryland Statutes or Regulations.

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Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Date Month Day Year

MDC 0149821

EPA Form 8700-22 (7-84)

HAZARDOUS WASTE MANIFEST

Department of Health and Mental Hygiene
Office of Environmental Programs
Waste Management Administration • Hazardous Waste Division
P.O. Box 13387 • Baltimore, Maryland 21203

C02482

ORIGINAL (RED)

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Form Approved. OMB No. 2050-0039 Expires 9/30/88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD 981 383 475 — Manifest Document No. 4989

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Webcraft Inserts
2015 Industrial Salisbury, Md. 21801

4. Generator's Phone (301) 546-4474

A. State Manifest Document Number MDC 0149896

B. State Generator's ID

5. Transporter 1 Company Name
Stroop Tank Corporation

6. US EPA ID Number MDD 034 213 1

C. State Transporter's ID HWH 125 DC 4744

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone 301-749-9318

E. State Transporter's ID HWH DC

9. Designated Facility Name and Site Address
Spectron, Inc.
111 Providence Rd.
Elkton, Md. 21921

10. US EPA ID Number MDD 012 180 0

F. Transporter's Phone

G. State Facility ID A183

H. Facility's Phone 301 398-1716

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Flammable Liquid NOS Flammable Liquid UN1993 (IPA, naptha, & Methylene chloride)	XX	DM	XX40	P	F001 F002
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Haz. Code	Physical State	Specific Gravity	Percentage
a.	I	L	1.90	100
b.				
c.				
d.				

K. Handling Codes for Wastes Listed Above
a. W c.
b. d.

15. Special Handling Instructions and Additional Information

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Printed/Typed Name: J. V. [illegible] Signature: [signature] Month Day Year: 12 15 88

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name: EARL LEE SIMMONS Signature: [signature] Month Day Year: 12 15 88

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name: Signature: Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Date

Printed/Typed Name: Signature: Month Day Year:

MDC 0149896

In case of an emergency or spill, immediately call the National Response Center at (800) 424-8802 and the Maryland OEP at (301) 225-5700 nights, and Holidays at (301) 243-8700.

EPA Form 8700-22 (7-84) COPY 5—TRANSPORTER: DETACH & RETAIN THIS COPY FOR YOUR RECORDS